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Archives of PHYSICAL MEDICINE *and* REHABILITATION

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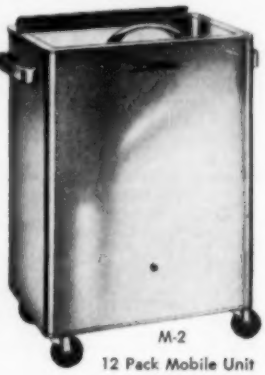

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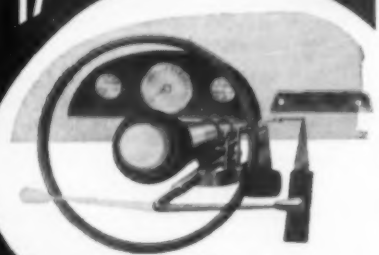

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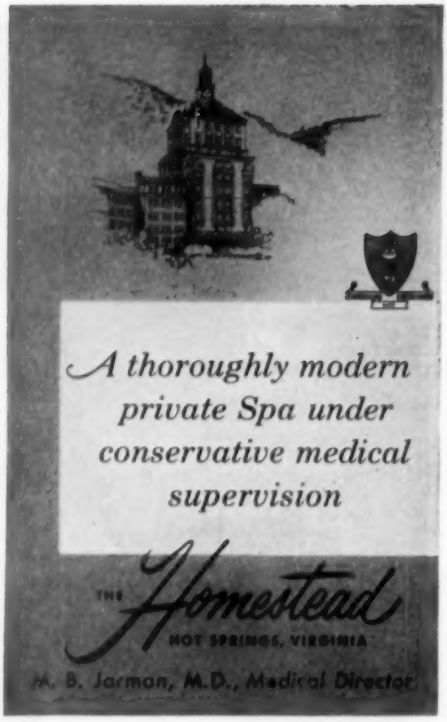

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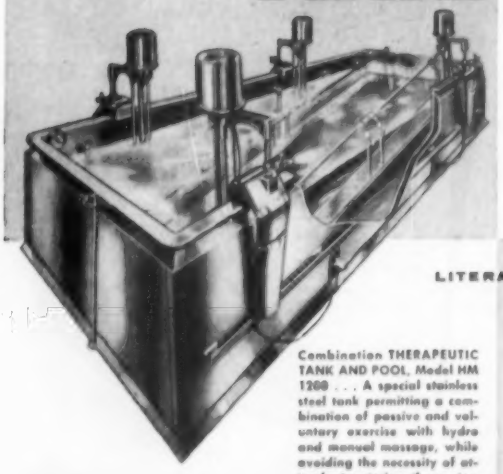

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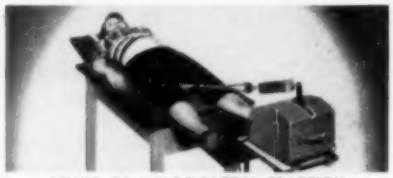

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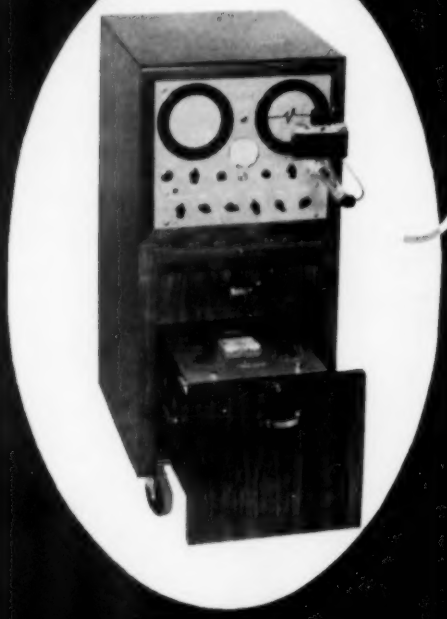

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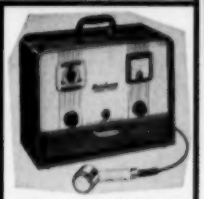

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Effect of Laboratory Studies on Treatment of Atherosclerosis

John J. Haglin, M.D.
Thomas O. Murphy, M.D.
and
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Minneapolis

Blood flow to a unit of tissue depends upon several factors existing in the patient and his environment. The degree of peripheral resistance, nervous and humeral activity, tissue metabolic rate, blood pressure, cardiac output, body and environmental temperatures, stress factors, and disease may all alter blood flow. In peripheral artery occlusive disease, generalized vasodilatation induced by whole-body heating or chemical means has been useful diagnostic and therapeutic procedure. The use of the popular chemical vasodilators has been recently reviewed by Nickerson[1] and their salutary effect well documented. However, inducing a generalized vasodilatation may be ill advised under some circumstances.

The phenomenon of a "borrowing-lending" relationship from one vascular bed to another during vasodilatation has been proposed by DeBakey, Burch, Ray and Ochsner[2] and termed hemometakinesia. The importance of this concept in consideration of the type and degree of sympathectomy for the therapy of ischemic vascular disease has been discussed by Atlas[3] in an attempt to produce a permanent vasodilatation only in an ischemic area.

In studies of normal subjects and patients with vasospastic and organic arterial insufficiency, Van Itallie and Clarke[4] found vasodilatation induced by whole-body heating and that induced by intravenous tolazoline (Priscoline) to be of approximately equal effect. However, the greatest effect was that induced by surgical sympathectomy. In a study of three sympathectomized extremities in which venous occlusion and peripheral pulse volume technics were used, they report a decrease in blood flow and a slight decrease in pulse volume with whole-body heating. Administration of intravenous tolazoline then caused a slight increase in peripheral pulse volume, but not to the postsympathectomy level. Ballentine[5] observed that peripheral blood flow was greater with lumbar sympathetic block than with tetraethylammonium chloride. These same authors further found that the subsequent administration of tetraethylammonium chloride after lumbar sympathetic block did not decrease digital blood flow, which does not follow the theory of hemometakinesia. This may be partially explained by an increased cardiac output in these patients.

Buchanan, Cranley, and Linton[6] cooled sympathectomized extremities but warmed the rest of the body with an electric blanket and found, in all five instances studied, a decrease in peripheral pulse volume as compared to that recorded when the body was exposed to the cool environment (20 C.).

This is a report of our observations of the effect of generalized vasodilatation upon digital pulse volume before and after lumbar sympathectomy.

Method

Patients with occlusive vascular disease of the lower extremities were studied in a constant temperature room using a Grass Electroplethysmograph after the method of Cranley, Buchanan, Sineone, and Linton.[7] Skin temperatures were periodically recorded from both the first and the fifth toes and both index fingers in close succession with an 8-lead Brown Electronic apparatus. The controlled-room temperature, which was also re-

Read at the Thirty-fourth Annual Session of the American Congress of Physical Medicine and Rehabilitation, Atlantic City, N. J., September 11, 1956.

From the Departments of Surgery and Physical Medicine and Rehabilitation, Medical School, University of Minnesota and the Minneapolis General Hospital.

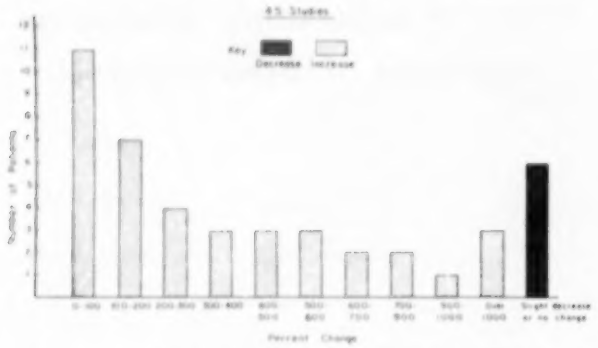

Fig. 1 — Relative change in digital pulse volume with whole-body heating before sympathectomy.

corded, was held within 1.5 C. of the set-point.

The patients were in a fasting state, covered only with thin hospital gowns, and were allowed to rest between studies until skin temperatures were constant. The postsympathectomy studies were done from two months to two years after operation, except for two patients who had been operated on five years previously. Cold environmental temperature was 20 C., and the warm environmental temperature was 35 C.

Forty-five extremities were studied to evaluate the effect of whole-body heating prior to lumbar sympathectomy. Eighty-six extremities were studied after lumbar sympathectomy to evaluate the effect of whole-body heating. Forty-five extremities were studied at 20 C. before and after lumbar sympathectomy to evaluate the effect of the sympathectomy.

Twenty-four sympathectomized extremities were studied at 20 C. before and after the intravenous administration of 50 mg. of tolazoline. Skin temperatures and peripheral pulse volumes of the sympathectomized extremities were recorded after all vital signs had returned to the preinjection measurements. In six extremities of this group, the effect of tolazoline upon the digital pulse volume and skin temperature of the unsympathectomized index fingers were recorded simultaneously with those of the sympathectomized toe.

All patients ranged from age 44 to 70. A separate group of 44 unsympathectomized extremities in 22 patients over 70 years of age was studied to evaluate the effect of heat-induced vasodilatation. Their ages ranged from 70 to 91 years.

All of these extremities represented organic arterial occlusions due to arteriosclerotic disease, groups II-IV by Cranley's classification.[8] However, since arteriographic studies were done upon only a few individuals, the exact degree and location of the arterial obliteration is difficult to classify accurately. For this reason, we have chosen to compare the change in each extremity with itself rather than to some chosen standard. As such, our reports shall be as relative changes in pulse volume of the extremities studied.

Results

Presympathectomy. — Figure 1 shows the degree of change in the digital pulse volume of the second toe as induced by whole-body heating in the presympathectomy group. Six extremities showed a slight decrease or no change at all; 18 extremities showed a moderate increase in peripheral pulse volume up to a two-fold increase. Only three extremities showed an increase of over tenfold.

Postsympathectomy. — Figure 2 shows the relative changes in digital pulse volume as effected by sympathectomy (same patients as first group). Pre- and postoperative studies were both done at an environmental temperature of 20 C. Two extremities showed a slight decrease or no change, while only eight extremities had a moderate increase of two-foid. Seventeen extremities had a greater than tenfold increase in peripheral pulse volume.

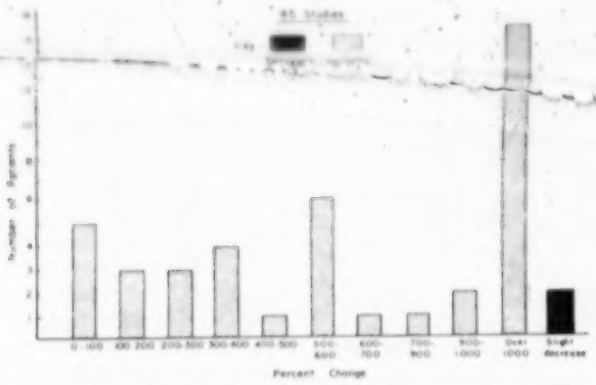

Fig. 2 — Relative change in digital pulse volume with sympathectomy, at 20 C.

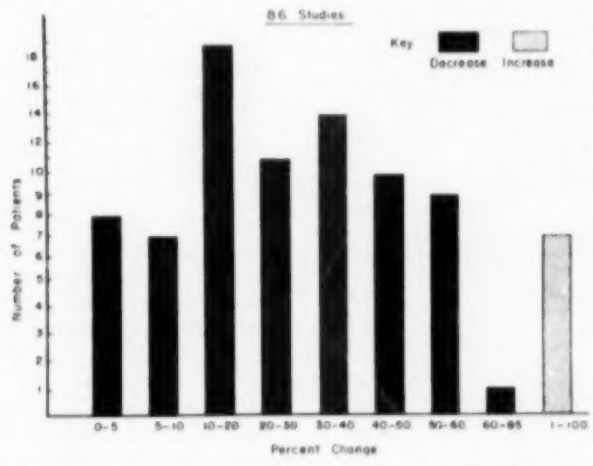

Fig. 3 — Relative change in digital pulse volume with whole-body heating after sympathectomy.

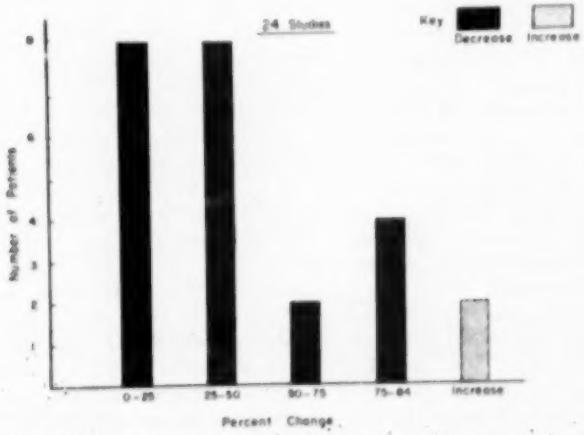

Fig. 4 — Relative change in digital pulse volume with intravenous tolazoline after sympathectomy, at 20 C.

Postsympathectomy with Whole-Body Heating. — Figure 3 shows the relative changes in peripheral pulse volume as effected by whole-body heating (to 37 C.) after lumbar sympathectomy. In 51 extremities there was a drop in pulse volume of 5-40 per cent. In 20 other extremities the changes were more severe, showing a decrease from 40-85 per cent of the original pulse volume recorded in a cold room (20 C.).

Postsympathectomy with Tolazoline. — Figure 4 shows the relative changes in peripheral pulse volume of the second toe of the sympathectomized limb as effected by the intravenous administration of 50 mg. of tolazoline, in an environmental temperature of 20 C. Two extremities showed an increase in pulse volume, both of which were less than a 20 per cent increase. Eight extremities had a decrease in pulse volume up to 25 per cent and the remaining 14 extremities had a decrease of 25 to 84 per cent of their original pulse volume.

Table 1: Comparison of Relative Changes in Digital Pulse Volumes of Finger and Sympathectomized Toe, with Intravenous Tolazoline and at 20 C.

Patient	Finger	Toe
J. L.	+50%	—40%
E. C.	No Change	—50%
G. J.	+65%	No Change
E. G.	+50%	—56%
G. K.	+640%	No Change
P. G.	+410%	—8%

Table 1 shows a comparison of the digital pulse volume of the sympathectomized second toe and unsympathectomized index finger, recorded simultaneously before and after the intravenous administration of tolazoline. The pulse volume of the toe had little change or decreased, while the finger showed an increase in five of the six patients studied. The skin temperature of the sympathectomized toes did not change, but that of the unsympathectomized fingers increased an average of 2 C.

Whole-Body Heating in Unsympathectomized Extremities in Patients over Age 70. — Figure 4 shows the relative changes in peripheral pulse volume as effected by whole-body heating (35 C.) in patients over 70 years of age. Twenty-five extremities showed only a moderate increase in pulse volume, while 19 extremities had a decrease.

Discussion

In the unsympathectomized normal and arteriosclerotic extremity there is a reasonably high correlation between peripheral pulse volume and peripheral blood flow, as shown by Winsor.[9] Assuming the validity of this correlation and the reasonable theory of hemometakinesia, the increase in pulse volume and skin temperature in the relatively normal index finger (table 1) allows us to assume that the simultaneous decrease in pulse volume of the sympathectomized toe probably represents a diminution in blood flow to the toe.

The relative increase in digital pulse volume with whole-body heating may be great, even in the arteriosclerotic extremity (fig. 1) prior to sympathectomy. Repeated studies in the same group show that the effect of sympathectomy is similar to that of preoperative whole-body heating, but that the degree of change effected by sympathectomy is much greater (fig. 2). However, inducing a generalized vasodilatation after sympathectomy by either whole-body heating (fig. 3) or tolazoline (fig. 4) resulted in a decrease in digital pulse volume.

The effect of whole-body heating in patients over 70 years of age showed a decrease in digital pulse volume in 43 per cent of the extremities studied. These patients have an increased peripheral resistance due to arteriosclerotic vascular disease and a decreased neurovasomotor activity. As such, the effect of generalized vasodilatation may be detrimental to a large percentage of such extremities even though unsympathectomized.

In all of these instances, there seems to be a redistribution of blood volume as well as changes in flow rate. In the group with preoperative whole-body heating, blood is shifted from the viscera and muscles to the periphery as a physiological heat-regulating mechanism.[10] In the next studies, after sympathectomy, there is an increase in blood flow to these limbs as documented by Herrick, Essex, and Baldes,[11] while the rest of

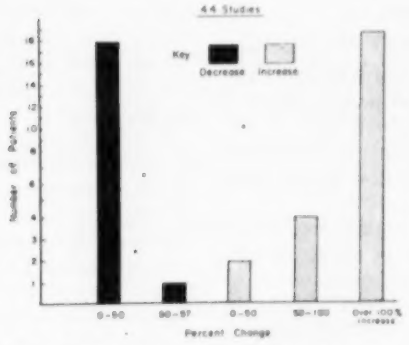

Fig. 5 — Relative change in digital pulse volume with whole-body heating in patients over 70 years of age.

the periphery is still vasoconstricted due to cold. We believe that, in the sympathectomized limb, with its fixed blood volume and peripheral resistance, the blood flow to the extremity is only affected by blood volume and peripheral resistance changes elsewhere. Thus, with whole-body vasodilatation there is a redistribution of flow to the detriment of the sympathectomized extremity, or, in the instances of the older age group, the extremity without vasomotor activity. This explanation is in keeping with the "borrowing-lending" phenomenon of DeBakey.[2]

Summary

The effect of generalized vasodilatation upon the sympathectomized and nonsympathectomized lower extremities, under controlled environmental conditions, has been presented. These studies have shown a constant decrease in peripheral pulse volume in the sympathectomized limb after chemically and thermally induced generalized vasodilatation. These data indicate that generalized vasodilatation may be detrimental to the ischemic sympathectomized extremity.

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Discussion

Leonard F. Bender (Ann Arbor, Mich.): This article has stimulated me to review several recent papers concerning circulatory physiology. It clearly shows to me the advances in diagnostic procedures and in practical therapeutics that have taken place in the few years since I have been graduated from medical school. The use of the electroplethysmograph as an accurate measurement of digital pulse volume has been accepted in several laboratories. The high correlation between digital pulse volume and digital blood flow is acknowledged. However, there is a possibility that the digital blood flow may not be an accurate representation of the blood flow in an entire extremity. Since the implication of the article is that whole-body heating consistently reduces the blood flow in a sympathectomized extremity, I wonder if the authors would care to comment on the relationship between digital pulse volume and blood flow to an entire extremity?

One of my colleagues at the University of Michigan has done considerable research on the effects of tolazoline (Priscoline) on the sympathectomized and unsympathectomized extremities of normal and diseased human beings. Using doses of 30 to 50 mg. of tolazoline intravenously, he has measured increases in blood flow in unsympathectomized upper extremities varying from 80 to 400 per cent in normal individuals and patients with Raynaud's disease. Intravenous administration of tolazoline following dorsal sympathectomy also increased the blood flow from 60 to 105 per cent, except in one patient whose blood flow decreased 2 per cent. Blood flow was measured with an extremity plethysmograph in which the water temperature was 38 C. In no patient did the blood pressure drop more than 4 per cent of the resting value. Dr. Haglin also has mentioned finding an increase in fingertip pulse volume in his post-lumbar-sympathectomy patients who received intravenous tolazoline. It would be interesting to know if he has done similar studies on sympathectomized upper extremities. I would also like to know what changes were noted in blood pressure during these experiments. A generalized fall in blood pressure could well contribute to the changes that are being ascribed to hemometakinesia.

Finally, I would like a description of the method of whole-body heating used in these experiments. I was unable to determine from Dr. Haglin's presentation just how this heating was accomplished.

In conclusion I would like to say that I have enjoyed the opportunity to open the discussion on this paper. It has been a stimulating and profitable experience for me to review the bibliography and to study the author's carefully collected data. I am sure that the clinical application of this scientific research is clear to all of us. Here we have a reasonable and well-documented contraindication to whole-body heating. It is not based on opinion or prejudice; it stands on a solid foundation of scientific data.

John J. Haglin (answer to discussion): We have chosen digital plethysmography because of its measure of circulatory changes in areas predisposed to the earliest and most drastic ischemic manifestations. The results of sympathectomy for the treatment of claudication have generally been questionable, but its effect in the preservation of the digital integument may be more rewarding. Thus, we have attempted to evaluate blood flow as a relative measure in this area. In view of this, we have studied the effect of vasodilatation only in this most critical zone and not the entire extremity. Others have shown that flow via the femoral artery is increased by vasodilatation but, as demonstrated here, sometimes to the detriment of the terminal critical vascular bed.

In answer to the second question, we do not feel that a complete sympathectomy of the upper extremity may be surgically performed by the common technics used today. In view of this, the data herein presented will only show a trend and not be as absolute as may be noted in the studies performed upon the lower extremity. We have performed similar studies of the effect of generalized vasodilatation upon the upper extremity both before and after dorsal sympathectomy and have found, as did

Dr. Bender, that there is an increase in digital pulse volume in each instance, but after sympathectomy the changes are of much lesser degree.

Finally, our heat-induced vasodilatation was performed by raising the temperature of the constant temperature room to the desired level, thus producing a uniform whole-body vasodilatation.

We feel that these data are conclusive for both the effect of heat-induced vasodilatation and also for that produced by chemical means, namely intravenous tolazoline.

IMPORTANT ANNOUNCEMENT

The Editorial Board of the *ARCHIVES OF PHYSICAL MEDICINE AND REHABILITATION* has established a special subscription rate of $5.00 per year to be granted to bonafide residents in physical medicine and other specialties in the United States, its territorial possessions, Mexico, Canada, United Kingdom and Europe. The following rules apply:

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Preparation of a Coaxial Electromyographic Needle Sterilizable by Heat

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Denver

One of the more serious complications following the introduction of blood or blood products in the human is viral hepatitis (infectious or homologous serum hepatitis).[1, 2] The relative thermostability of the virus,[3] its resistance to chemicals, and its resistance to ultraviolet rays make its destruction difficult.[4, 5] On occasion the virus has been transmitted, presumably, by contaminated needles.[6, 7] This latter method of transfer of the virus can be minimized by autoclaving needles and syringes; however, electromyographic needles, especially the coaxial ones, cannot be handled as simply.

The first question to arise is whether the transfer of hepatitis virus by an electromyographic needle is a possibility which would require special consideration. As noted above, transmission of the virus by other needle procedures may occur. Because of the long incubation period (60 to 150 days) it is not easy to describe a causal relationship between the insertion of a needle for an electromyographic study and a subsequent viral hepatitis. In at least one instance in my experience, however, such a relation was strongly suggested. This was in a volunteer whose position was such that he could be followed in the department for an indefinite period of time. The subject was normal and was being used to demonstrate the electromyographic technic. Approximately 75 days after electromyographic study the subject developed a viral hepatitis. The needle that was used had been sterilized with conventional chemical technics (70 per cent alcohol for 2 hours followed by 24 hours in 1:1,000 Zephiran). There had been no inoculation with blood or blood products, and no other injection. Quite obviously the evidence for implication of the electromyographic needle is not conclusive. Yet, if the possibility for such transfer exists, a technic that allows for needle sterilization by heating to a sufficiently high temperature would be preferable.

The needle that was finally developed can be sterilized in an oven at 100 to 104 C. for 10 to 12 hours (or longer) without damage. It is felt that this is a safe margin since the virus of homologous serum hepatitis can be inactivated by treatment, in the wet state, at 60 C. for 10 hours.[8] This ability to sterilize the needle is not achieved at the expense of ease of use and accuracy, for the needle can readily be removed from the system, and the electromyographic pattern is repeatable even after several sterilizations. Furthermore, the electrode is extremely easy to prepare and of very low cost.

Technic of Needle Preparation

A 25 gage hypodermic needle, either ⅜ or 2 inches long, is used in all instances. A 10 to 12 inch length of 40 gage copper wire, insulated with Nylclad (resistant to chemical action, moisture, high temperature, and manipulation) is threaded through the needle from the pointed end. The portion protruding through the shank is dipped into a Sherwin-Williams baking varnish (No. V 61 V5) and the wire is then pulled back and forth until the entire length of wire inside the needle is coated with varnish. Approximately ½ inch of wire is left protruding from the pointed end of the needle. The shank of the needle is then filled with varnish, and the unit is then baked, in the upright position, at 100 to 104 C., for 8 to 10 hours. This procedure provides adequate fixation for the coaxial wire and thus prevents mechanical artifact.

After this baking period, the wire protruding from the pointed end of the needle is shaved off flush with the bevel

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This study was aided by a grant from the Muscular Dystrophy Associations of America.

of the needle point. The needle must then meet two requisites before being accepted for use: first, infinite resistance between shaft of needle and 40 gage wire; second, continuity between the two ends of the 40 gage wire. The latter is tested by inserting the needle tip into a pool of mercury, placing one ohmmeter lead into the pool, and connecting the tip of the 40 gage wire that projects from the shank to the other ohmmeter lead. This step was found to be important, for if the tip of the wire in the needle is coated with varnish or if it has retracted up the needle shaft, functional continuity is absent. After passing these tests, the needle (with approximately 8 to 10 inches of the 40 gage wire protruding from the shank end) is sterilized by baking at 100 to 104 C. overnight, and is then ready for use.

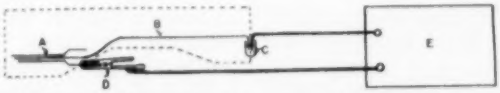

Fig. 1 — Diagram of heat sterilizable coaxial electromyographic needle. The section within the broken line is easily removed for such sterilization. See text for details.

Coupling of this sterilizable unit to the leads to the preamplifier (E) can be easily achieved (fig. 1). One preamplifier lead terminates in an alligator clip (D) which can be clamped to the shank of the needle (A). The other preamplifier lead terminates in a short segment (⅛ inch) of uninsulated wire which dips into a mercury pool (C). The input circuit is complete when the free end of the 40 gage wire (B) also is dipped into the mercury pool. For better electrical contact the insulation is removed from the terminal millimeter of the 40 gage wire (B) (the end dipping into the mercury pool).

Several such needles have been prepared, so that a sterile needle is always available, kept in a sterile, closed tray. After each use the coaxial needle (section within the broken line in figure 1) is put aside for baking overnight at 100 to 104 C. The technic is a simple one, the recordings are reliable, the time taken is no longer than with previous methods, and the danger of transmission of hepatitis virus is minimized. It is conceivable that, when tissue culture technics are made available for growth of hepatitis virus, the temperature and time suggested here will be found far in excess of what is actually necessary to destroy the virus. Until then it would seem advisable to err on the side of safety.

Summary

A technic is described for preparation of a coaxial electromyographic needle that may be sterilized by dry heat at the 100 to 104 C. level.

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Foot Control Driving Apparatus for Patients Having Little or No Function in the Upper Extremities

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David Kope, B.S.
and
Cameron Enns
California

Various kinds of hand-controlled driving devices have been constructed for paraplegic patients which enable them to drive an automobile. Until very recently no comparable equipment has been made for patients possessing severe paralysis of the upper extremities. Realizing the serious need of several of our poliomyelitis patients for this kind of equipment, consideration of this problem was given by the medical, engineering, technical, and rehabilitation members of our Physical Aids Development Society (P.A.D.S.). Various designs and procedures were discussed as theoretical possibilities, but no actual construction was undertaken, largely because of lack of funds. Eventually, however, the problem was undertaken by one of our patients (C. E.) and the Rehabilitation Officer (A. G. G.). An outline of a plan for the construction of suitable foot control equipment was presented to a mechanical engineer (D. K.) who succeeded in making the foot control driving equipment. The device was constructed to suit the specific needs of our poliomyelitis patient with severe paralysis of both upper extremities.

Case History

A synopsis of the case history of the patient is as follows: The patient is a white male, age 25, who is ambulatory and has made extensive physical and vocational recovery. He developed anterior poliomyelitis when he was 21 years of age, in November, 1952. He was taken to the Fresno General Hospital where he was treated during the acute and early convalescent stage. His initial symptoms were backache and sudden inability to breathe. He was placed in a tank type of respirator where he remained for a period of six months. A tracheotomy was performed promptly and the tube retained until August, 1953. His fever was 103 F. and lasted for two weeks. In addition to his respiratory difficulty, he had considerable difficulty in swallowing. There was marked weakness of the anterior neck muscles, extensive paralysis of the muscles of both upper extremities, upper trunk, and abdominal muscles. Breathing was almost entirely diaphragmatic. His vital capacity increased to approximately 900 cc. at the time of discharge to outpatient status in May, 1953, and subsequently increased to 1400 cc. by September, 1953. It was necessary for the patient to continue using a Monaghan chest respirator each night and during part of the day while he was an outpatient in Fresno. The physical therapy program consisted of neuromuscular re-education, electrical stimulation, pool therapy, stretching, and Hubbard Tank treatment. He was provided with abduction braces for the shoulders and an abdominal support. He was transferred to the California Rehabilitation Center (formerly the Kabat-Kaiser Institute) on September 9, 1953, where he was treated as an outpatient.

At that time the patient was 22 years old, 6 feet tall, and weighed 175 pounds. His breathing was almost entirely diaphragmatic and also limited and inconstant on the left side. It was necessary for him to use a chest respirator every night in order to maintain suitable endurance to carry on his treatment. By January, 1954, he was using the chest respirator every other night and was able to discard it entirely four months later.

From the California Rehabilitation Center, Santa Monica.

There was extensive atrophy of the muscles of the shoulder girdle, neck, arms, and, to some extent, the upper trunk. The back showed a right dorsal, left lumbar scoliosis, a marked drooping of the left shoulder, and, to a lesser extent, the right. The finger and thumb flexors were rated as +3 in weakness on the right, and +1 on the left, +3 weakness of the finger and thumb extensors on the right and +2 on the left. There was no opponens action of the thumb of either hand. There was +3 weakness of the abdominals and +1 of the right hip flexors. Tendon reflexes of the upper extremities were absent. The abdominals and cremasterics were absent. Knee jerks and Achilles tendon jerks were graded as +2 on both sides. No pathological signs were present and no sensory disturbances were observed. The Romberg test showed normal balance, the co-ordination of the lower extremities was good, but was essentially absent in the upper extremities. Sitting and standing balance was good. The patient was able to walk without assistance.

The patient was placed on a full, intensive outpatient treatment program, consisting of neuromuscular re-education, occupational therapy, and therapeutic exercises, including mat exercises, pool therapy, and swimming.

During the course of his treatment he showed improvement in endurance and considerable improvement in the power of his left wrist, finger extensors, thumb flexors and adductors, and, to some extent, the flexors of his left forearm. The patient showed considerable improvement in the strength of his neck flexors and abdominals. His vital capacity increased from 1,400 cc. to 2,150 cc. over a period of one year of treatment. He was discharged to a home treatment program and vocational rehabilitation in December, 1954.

There was still marked weakness of the muscles of both shoulders, marked weakness of the muscles of the right arm, forearm, and hand; on the left there was a little wrist flexion, and fair to good finger flexion. The left hand had improved quite significantly and had become his functional hand. During the succeeding months reconstructive surgery was performed in an effort to improve his self-care activities. These procedures may be listed as follows: (1) Interscapular fascial transplants and a fascial sling for the left shoulder, (2) opponens transplants for the right and left thumb, and (3) a modified elbow flexor transplant ("Stendler Shift") for the left forearm. These procedures, with further training, enabled the patient to perform self-care activities with his left hand, such as washing his face, shaving, brushing his teeth, and combing his hair. In order to accomplish these activities it was necessary for him to support his elbow on a shelf, table, or desk so that the shoulder became passively flexed through a range of 45 to 90 degrees. With the arm supported in a near horizontal position, the patient had enough power in the transplanted elbow flexor to flex the forearm sufficiently to bring the hand to the face or to the top of the head. At the present time he is able to dress and undress himself completely without assistance; however, except for some of the simple self-care activities mentioned, his upper extremities are essentially nonfunctional.

Foot Controls for Automobile

The requirements for satisfactory foot controls to drive an automobile may be summarized as follows:

1. They must provide adequate control of the car under all conditions.
2. The device should be dependable, simple to install, and essentially free of service maintenance.
3. It should be easy to learn to operate the apparatus.
4. It should be inexpensive, and easy to operate.

It was believed also that the foot control equipment should not interfere with the standard hand controls, for it is highly desirable that the regular controls remain on the car unchanged to enable normal persons, such as members of the family or friends, to drive the car at any time. The driving equipment, as subsequently described, seems to satisfy all of these requirements.

The driving apparatus consists of a suitable foot steering device and acces-

sory foot control equipment. Consideration was given to the selection of an automobile that would provide easy and safe operation, easy installation, and not be too expensive. A 1956 Ford automobile, with automatic transmission and power steering, was found to be very satisfactory for our needs.

Foot Steering Device: The foot steering apparatus is very simple. It consists of an auxiliary "steering wheel" which is placed on the floor beside the regular steering shaft. It is positively connected to the original steering equipment of the car by means of a roller chain in such a manner that when one wheel turns the other turns also. This auxiliary wheel is a round, steel disc, mounted on rigid and adjustable steel brackets with sealed ball bearing (see fig. 1). Near the outer edge of this auxiliary steering wheel is a self-aligning ball bearing holding a steel "slipper" or clamp into which the driver wedges his left foot. With the shoe firmly held, the foot can spin the wheel from the floor in the same manner that a person can turn a regular steering wheel with a hand "wheel spinner" or knob. The pivot point is near the toe of the slipper.

In order to achieve sensitive and positive control at high speed, a rubber pad is fastened on the heel of the slipper and, when in driving position, is pressed against the lower part of the foot steering wheel, holding the foot flat across the wheel in the central position. In this position the wheel is turned by rotating the ankle (in-toeing or out-toeing of the foot, using the heel as a pivoting point), giving positive and accurate control for straight-ahead driving, passing other cars, and negotiating turns and curves of moderate sharpness. Sharp turns and corners, parking, and similar maneuvers require the heel to be lifted enough to permit the toe to spin the wheel. Even at high speed steering with the foot seems just as safe as using two good arms, and requires much less effort. Power steering provides easy steering for hand control operation. Likewise, with this equipment it is simple to adjust the steering ratio with the foot wheel to provide rapid and easy steering action. The mounting bracket is adjustable to keep the slack out of the linkage of the foot steering wheel; however, adjustment should seldom be necessary. No lubrication is required with the sealed ball bearings, and the unit should last for many years.

For patients having little or no functional use of their arms and forearms, automatic transmission is necessary in or-

Fig. 1 — Foot control steering device and accessory foot control equipment for automobile; *A*, auxiliary foot steering wheel consisting of metal disc which operates original steering mechanism by means of roller chain; *B*, steel slipper or clamp attached near outer edge of steering disc; *C*, rubber pad fastened to heel of "slipper;" *D*, foot accelerator; *E*, foot brake; *F*, foot control handle attached to selector lever rod; *G*, foot control handle for parking brake; *H*, foot control knob for windshield wiper; *I*, foot control or hand control handle for ignition key.

der to have one foot free for steering and leave the other to operate the accelerator pedal and foot brake.

Accessory Foot Control Equipment

In addition to the development of a safe, suitable, and dependable foot control steering device, it was found necessary to construct some accessory control equipment to permit a patient with such serious disability of his shoulders and forearms to drive an automobile by himself, completely independent of assistance. Auxiliary attachments were easily fitted to parts of some of the existing car controls and, when installed, were accessible and easily operated by the feet. The necessary foot control equipment is described as follows:

1. *Selector Lever Rod:* A handle control was attached to the selector lever rod. This enables the operator to set the driving position of the transmission at a chosen position (neutral, low, drive, or reverse) by using his right foot. This foot selector control is attached to the selector shaft near the floor in order to put it within easy range of the foot; it does not interfere with hand controls in any way.

2. *Parking Brake Control:* A foot control handle, serves for the operation of the parking brake. This was attached to the shaft near the floor board. The brake is operated by pulling upward on the handle to the desired position with the heel of the right foot, and locked by slight rotation of the handle. It is released by slight counterrotation, either with the right foot or the left knee, and the brake is returned to the release position by a coil spring originally supplied for the hand brake control. Here, again, no alteration of the original control equipment was necessary.

3. *Windshield Wiper Knob:* A foot control windshield wiper knob was provided by fitting a larger rubber ball over the original control knob to make it easier to operate. The windshield wiper is turned on and off by the right foot.

Operation of the Modified Automobile

The ability of the patient with flail arms to negotiate sharp turns and sudden stops was not a problem as expected. Increased pressure on the brake or foot steering wheel pushes the driver deep into the seat, prevents his body from shifting, and does not interfere with the steering. The conventional steering wheel is still in position to support the body if thrown forward by a sudden stop.

The following is a brief description of the procedure followed by the patient in driving his foot-controlled automobile. To operate the car, the driver opens the door by putting the thumb of his left hand beneath the door handle and leaning his hip against his thumb; the door is released, and is further opened by his foot. He slides into the seat and closes the door with his left foot. He adjusts the selector position with his right foot, starts the engine by rotating the key ignition lever with his left toe, releases the parking brake with the foot control lever, using either his left knee or his right foot, fits his foot into the steering slipper of the foot steering wheel, and sets the car in motion by operating the accelerator pedal with his right foot.

Fortunately, our patient, with physical treatment and surgery, recovered enough power in his elbow flexors to allow him to flex his left forearm through 90 degrees against gravity and has sufficient power of his finger flexors and opponens transplant to grasp objects of any size even though the grip remains subnormal. Using his left hand, he is able to operate his car key, turn the headlights on and off, and operate the directional signal with the signal lever. It was the good fortune of the patient to have learned to drive an automobile before contracting poliomyelitis, and it was necessary for him only to learn to operate the foot controls of the car. With only three days of driving instruction and practice he passed his driver's license test with a high mark of proficiency. He has taken long trips, including mountain driving, as well as extensive city driving in heavy traffic, with perfect safety and without any assistance, since learning to operate the foot control apparatus of his automobile. The development of suitable transportation for this patient has provided the last phase of his rehabilitation program. He is now self-employed

as a salesman and uses his foot-controlled automobile very extensively in his work. Vocational rehabilitation for him has been achieved, though it has required nearly four years of continuous effort, treatment, and training to achieve his rehabilitation goal.

It is our opinion that every caution should be exercised in training a patient to drive an automobile by means of foot controls and that, in time, special evaluation tests should be established to examine such patients. The tests should supply information regarding a number of physiological and psychological factors such as muscle strength, co-ordination, reaction time, judgment of distance, and reactions to multiple choice situations. They should include also some standard psychological tests which may furnish some information about the patient's temperament, judgment, emotional stability, and habit patterns. For patients who have never driven an automobile before, even greater precautions should be taken than for normal persons, both from the point of view of safety to the patient and to other drivers, but also for the protection of the professional and legal standing of the rehabilitation personnel and traffic officials concerned in obtaining a driver's license for individuals with such severe disabilities. Pre-driving instruction in the use of foot controls should be utilized by selected patients before starting to drive, using a stationary automobile fitted with suitable foot controls. Following this, the patient should have a comprehensive series of driving lessons to perfect the driving skill before being permitted to drive alone or take a driver's license test. We believe that a testing and training program of this kind should be mandatory for patients buying foot control equipment of this kind and that the sale of such equipment should be limited to those who are willing to obtain such training and instruction.

It seems to us desirable also that a rather comprehensive study of similar patients should be made in the future, to evaluate the skills of patients driving with foot controls and to develop additional equipment to meet the physical needs of paralytic patients with varying kinds and degrees of physical disability. Tentative plans are being formulated to carry on an evaluation project of this kind and the results of the endeavor will be reported at some future time.

NOW AVAILABLE — Newly revised edition, "Your Registry." Published and distributed by American Registry of Physical Therapists. Copies, *without charge*, may be had on request. Write Registrar, American Registry of Physical Therapists, 30 N. Michigan Ave., Chicago 2, Illinois.

Physical Medicine and Rehabilitation in the Member-Employee Program

Jacob L. Rudd, M.D.
Boston

The physical medicine and rehabilitation service in a psychiatric hospital helps the psychiatrists cope with the emotional conflicts and repressed drives of the patients. This is followed by an all-out effort to aid the patients in their return to the community as useful, productive citizens.

An attempt is made to meet the psychological needs of the patients and to accomplish an appreciable measure of socialization. Treatment and training in the six therapy sections of our service (physical, occupational, corrective, educational, manual arts, and industrial) are made available to the patients so that they can receive aid in progressing by gradual steps to the highest possible attainment consistent with their mental and physical condition.

The Member-Employee Program

The following material, which refers to the Member-Employee Program, was obtained from three sources: (1) the "Member-Employee Brochure,"[1] (2) personal interviews with members of the hospital staff, and (3) personal observation.

The Member-Employee Program was considered necessary to ease, or make more probable, the transition from the hospital to an acceptable social and economic participation in the community. It represents the concentrated effort that must be made to provide the important missing link in the chain stretching from the hospital ward to normal community living.

It is recognized that money is a potent factor in the rehabilitation of mental patients.[2] It was reasoned that the patient's rehabilitation process must include some sort of an incentive-award system that approximates that found in the community. The Member-Employee Program stresses the point that knowing how to use money is basic to our culture. It regards such remuneration as fundamental in treatment since money possesses such tremendous motivational possibilities. The concept considers that a more normal social environment is found when patients can relearn the exchange power of money for the purposes of learning to live a more satisfying and complete life. To carry out this program, patients are housed in a dormitory setting apart from other patients, receive a salary for their work, and are permitted to spend their salary in accordance with their own inclinations.

Increasing Stress and Strain

By graduated steps the Member-Employee Program teaches the individual to endure increasing stress and strain.[1] The former patient learns to cope with many of the problems he must face when he returns to the community. The problem of stress and strain probably presents the most critical area in the rehabilitation of the psychiatric patient as it so often does in the life of the average so-called normal personality. Hospitalization in a mental hospital has been a traumatic experience involving a complete change in the social situation. Maxwell Jones,[3] while acting as a consultant in mental health to the World Health Organization, visited many hospitals in the United States and Europe, and noted that everything possible was done to make the patient's stay pleasant and interesting. Even when the patient

Read at the Thirty-fourth Annual Session of the American Congress of Physical Medicine and Rehabilitation, Atlantic City, N. J., September 14, 1956.

Special Instructor, Tufts Medical School and Boston-Bouve School of Physical Therapy, Boston; Chief, Physical Medicine and Rehabilitation Service, VA Hospital, Brockton, Mass.

was nearing discharge, the planned day was designed to please him rather than prepare him for the rugged role that would be his in the world outside the hospital grounds. Peffer expressed himself more forcibly on this point when he stated that it may be a mistake to preserve the "hospital atmosphere" for patients who are moving toward social recoveries. It is just at this time that he must be prepared, by a series of gradually increasing demands, to meet and overcome the average pressures that will be forced upon him by a culture that places emphasis on competition and success. Peffer asks, "Is it not an injustice to shield the individual from these pressures of normal society until the actual day that he returns to a competitive life in society?"[2]

The Member-Employee Program is designed to serve as a means of reinforcing the gains made by the patient from other forms of treatment, and also to serve as a bridge from the hospital to the community.

As more and more formerly disturbed and regressed patients become accessible to treatment by psychotherapy, drugs, activities in physical medicine and rehabilitation, and in other therapies, the Member-Employee Program has been broadened to include a larger number of patients who were previously regarded as hopeless.

It is important to remember that this program is considered as only the first step toward the development of a community-oriented rehabilitation program, and not as the only step.

Peffer said that many of our hospitals are well equipped to provide the preliminary phases of rehabilitation through efficient occupational and manual arts therapy departments and that only a few hospitals can provide facilities for that important final rehabilitation stage in the hospital which will help an individual to live at home and work at a job in the outside world. All too often long-term patients in mental hospitals, who have mastered almost every skill provided in the occupational and manual arts therapy sections, still remain permanent residents of the chronic wards. They have been unable to progress because there is nothing new for them to do. They feel that little is to be gained by relearning skills that provided them, for a time, with a respite from the monotony of hospitalization.

Job Assignments

Kinds of jobs assigned to the member-employee are determined to a great extent by the vocational and psychiatric evaluation and by the ability the patient shows in physical medicine and rehabilitation service activities such as educational, manual arts, and industrial therapy. The work done and socializing experiences so gained help close the wide gap so often present between the demands of the community and the permissiveness of the hospital environment. It supplies the necessary conditioning of mind and body before a patient is discharged from the hospital to a work situation in the community. It cannot be stressed too often that a failure in adjustment often occurs when work and social activities outside the hospital are attempted without the preconditioning found in physical medicine and rehabilitation and the subsequent conditioning inherent in a member-employee program.

The range of member-employee jobs at the Brockton VA Hospital is as follows:

Engineering: Auto mechanic helper, draftsman, electrician's helper, engineering aide, general mechanic's helper, laborer, plumber's helper, preventive maintenance helper, steamfitter's helper, welder's helper.

Clerical: Clerk-typist, IBM operator, library assistant, messenger, mimeograph operator, payroll clerk, property and supply clerk, storekeeper, retail clerk.

Medical: Dental technician, industrial therapy aide, manual arts therapy aide, medical technician, occupational therapy aide, x-ray technician.

Dietetic: Baker, baker's helper, bus boy, canteen worker, food service, kitchen worker.

Housekeeping: Janitor, custodian.

Miscellaneous: Carpenter's helper, laundry worker, painter's helper, barber, gardener, tailor, recreational leader, sports equipment manager.

Approximately 40 member-employees fill their job categories at any one time.

Since its origin in January 1955, a total of 175 member-employees have entered on the Program; 96 are successfully functioning in the community; 53 have been readmitted to the hospital — 36 from the program itself, and 17 from the outside community. Of this latter figure, 10 have since returned to the community. Reasons for members' readmission to hospital were: "imbibed excessively in alcohol," "exacerbation of symptoms," "refusal to work," "bringing liquor into living quarters," "difficulty with family," and "refusal to take tranquilizing medication." At present 39 member-employees are on the program.

Physical Medicine and Rehabilitation

The physical medicine and rehabilitation service offers a dynamic, integrated plan in physical, occupational, and corrective therapy as well as in the more advanced aspects of training found in educational, manual arts, and industrial therapy. Instruction in these six sections is purposeful and progressive. A close liaison is constantly maintained with psychiatrists, psychologists, vocational counselors, the member-employee supervisor, the social workers, and other members of the hospital staff who work with the patients.

All the patients entering the hospital are referred to our service. Their histories are reviewed by the psychiatric team that meets to consider the assignment of new patients. A representative of our service is often present. Subsequent progress notes written by the rehabilitation therapists help the physicians determine whether the patient should remain with a particular group or move on to another, more advanced activity. Some of the recently admitted patients are "tried out" in a few of our sections. This needs to be done, since some of the new admissions have little or no history to indicate where they should be placed, and it is often impossible to obtain any information from the patient. Subsequent follow-up by the psychiatrists, physiatrists, therapists, psychologists, and vocational advisors determines whether a patient was correctly assigned or, if not, to what section he should be transferred. When the patients are being "tried out" a better idea is obtained regarding their likes and dislikes as well as their ability to work, learn, and socialize.

In a direct way the role of the physical medicine and rehabilitation service aids in the promotion of a number of patients to member-employee status. The patients are preconditioned to the point where they are able to adjust progressively in the so-called "lower-level activities" (at the beginning of therapy in physical medicine and rehabilitation) until they are considered well enough to work in the "higher-level" industrial therapy program. From the very beginning it is understood that a patient cannot be considered for member-employee status unless he makes a good adjustment in physical medicine and rehabilitation. The Member-Employee Program is, in a real sense, an extension of the planning begun in physical medicine and rehabilitation. It is continuous with the treatment given in the hospital by the psychiatrists. It provides better assurance to the patients and the staff that the discharged patient will be so well conditioned by rehabilitation that there will be fewer obstacles for the individual to overcome in making a satisfactory work adjustment.

Conclusion

The objectives of the physical medicine and rehabilitation service are not only to satisfy therapeutic needs from the very beginning, but also to inculcate a work-oriented philosophy in patients and therapists. The extension of the physical medicine and rehabilitation service into the Member-Employee Program is a relationship that starts on the lower-level motivated activities and progresses steadily to the higher-level motivated activities. The physical medicine and rehabilitation service personnel are in a strategic position to observe and recommend candidates for member-employee status. The patient must first make an adjustment in

physical medicine and rehabilitation. Only then will he be considered capable of attending to member-employee duties.

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Employment Outlook for Physical Therapists: A Survey of Salary and Personnel Policies

Dorothea C. Augustin

and

Janet A. Ehmann

Chicago

Shortly after the establishment of the American Registry of Physical Therapists (then American Registry of Physical Therapy Technicians), the Registry Board was of the opinion that a Placement Bureau would be of great value and benefit to physical therapists meeting the requirements and standards set forth by this organization. It also felt that such a bureau would perform a definite service to those seeking qualified personnel. The bureau operated on a person-to-person basis for a time and the first organized listing of available physical therapists and positions was distributed by the Registry office in mid-1944. At that time eight physical therapists registered for the service and ten positions had been listed. *Currently, an average twelve-month period check reveals the Bureau distributed 4500 copies of the available therapist listing to prospective employers and 750 new available positions had been registered.*

As the service became widely known, its activity grew proportionately. With the enlargement of the Bureau new problems were encountered. The American Registry of Physical Therapists was consulted in matters of employment other than the mere distribution of listings of available personnel and positions. Repeated requests were received by the Registry to prepare and distribute a salary and personnel policy survey covering physical therapists throughout the United States. At the direction of the Board of the American Registry of Physical Therapists, the central office undertook this project. The survey was begun in May, 1956. Listing of hospitals used in this study was obtained from the August, 1955, Journal of the American Hospital Association, Part II, Administrators Guide Issue. The types of hospitals contacted were general, mental and allied, children's, orthopedic, chronic, and convalescent with each hospital having a minimum of 100 beds. The survey was sectioned into seven geographical areas which are detailed in the findings. A total of 2200 questionnaires (Fig. 1, 2, 2A) was mailed; 970 replies (44%) were received. Of the returned questionnaires, 77+% replies were considered valid for tabulation purposes. A period of approximately ten months was spent in recording and tabulating results.

The questionnaire used in this survey is representative of the questions received by the Placement Bureau in the past ten years. The reported results are in no way to be interpreted as official opinion of the American Registry of Physical Therapists. These findings are a tabulation of information gathered from the sources listed throughout the United States, Canada, Hawaii and the Commonwealth of Puerto Rico.

Registrar-Secretary-Treasurer, American Registry of Physical Therapists; Executive Secretary, American Congress of Physical Medicine and Rehabilitation.

Assistant to Registrar and Assistant Director of Placement Bureau, American Registry of Physical Therapists; Staff, American Congress of Physical Medicine and Rehabilitation.

Dorothea C. Augustin, Registrar *Telephone: CEntral 6-9512*

AMERICAN REGISTRY OF PHYSICAL THERAPISTS
30 North Michigan Avenue • Chicago 2, Illinois

Gentlemen:

The American Registry of Physical Therapists has conducted a placement service for more than ten years, and it is hoped that information received from the enclosed questionnaire will be helpful to us in developing policies and procedures related to the placement of qualified personnel.

Although we ask you to identify your group on the questionnaire, we wish to assure you that this information will not be released to other organizations. If you are interested in the findings of this study, we will be glad to make them available to your group.

We will appreciate receiving the completed questionnaire as soon as it is possible for you to return it to us. A return envelope is enclosed for your convenience. The second copy of the questionnaire is for your files.

Your courtesy in cooperating with us in this project is deeply appreciated.

Very sincerely yours,

AMERICAN REGISTRY OF
PHYSICAL THERAPISTS

Registry Board

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The American Physical Therapy Association

Fig. 1

AMERICAN REGISTRY OF PHYSICAL THERAPISTS

30 North Michigan Avenue • Chicago 2, Illinois

HOSPITAL BED CAPACITY_____ NO. OF PHYSIATRISTS_____

AVERAGE DAILY LOAD IN PHYSICAL MEDICINE DEPARTMENT_____

OWNERSHIP (check one)

Governmental (nonfederal)

State ☐ County ☐ City or Municipal ☐ City-County ☐ Hospital District ☐ (created by state law)

Federal

Air Force ☐ Army ☐ Navy ☐ Public Health ☐ VA ☐ Other Federal ☐

Nonprofit

Church-operated ☐ Church-related ☐ Other nonprofit ☐

Proprietary

Individual ☐ Partnership ☐ Corporation ☐ (unrestricted as to profit)

TYPE OF INSTITUTION (check any that apply)

Private ☐ General ☐ Community ☐ Rehabilitation Center ☐

University Hospital ☐ In-Patient ☐ Out-Patient ☐

	Group I Starting Therapist*		Group II Experienced Therapist*		Group III Chief Therapist*		Group IV Supervisor*	
No. employed in dept.								
No. qualified**								
Salary Range								
Vacation								
Increment Plan (circle)	Yes	No	Yes	No	Yes	No	Yes	No
Working Hrs. per Wk.								

OTHER BENEFITS (answer yes or no)

Blue Cross only_____ Blue Cross and Blue Shield_____

Paid Holidays_____ If yes, give number_____

Insurance Policy_____ Retirement Benefits_____

* Applies to **physical** therapists only.

** Member of American Registry of Physical Therapists, American Physical Therapy Association, or state registered.

Fig. 2

OTHER BENEFITS (answer yes or no)

Uniforms furnished_____ Uniforms laundered_____

Meals_____ If yes, give number per day_____

Sick leave_____ If yes, give number of days_____

Housing_____ Bonus_____

Are your salary policies fixed by other groups?_____.

If so, please list:

Is state registration required?_____

Do you give discount to employees?_____. If yes, what per cent?_____

Do you have any educational facilities for employees?_____

If yes, give type:_____

_____

Do you permit periodic attendance at conferences?_____

Do you consider overtime as part of one's salary?_____

Do you employ part-time personnel?_____. If yes, hourly rate_____

Does your group have any preference as to creed or sex?_____

If yes, give preference_____

Has your group ever utilized the services of the Placement Bureau of the American Registry of Physical Therapists?_____. If yes, did you find the service helpful?_____

Comments_____

_____

If you are interested in the findings of this study, we will be glad to make them available to your group. Please indicate your wishes below:

Yes, I wish to receive the results of this survey. Please send_____ (No.) copies to:

_____

Name of addressee (please print or type)

_____

Name of organization

_____

Street address

_____

City Zone State

Fig. 2A

GROUP I

Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont.

QUESTIONNAIRES

158 questionnaires mailed:
43 per cent replied;
81 per cent of replies used in survey.

Greatest number of beds reported	2072	
Smallest number of beds reported	100	
AVERAGE		420.6 beds
Largest daily load in PT Dept.	125	
Smallest daily load in PT Dept.	5	
AVERAGE		42.9 patient visits

Table 1: Average beginning salaries in each listed category and basic employment information

	Starting Therapist*	Experienced Therapist*	Chief Therapist*	Supervisor*
Private Hospital	$2894	$3243	$3674	$4174
General Hospital	3014	3576	4133	4668
Community Hospital	3076	3435	3694	4380
Rehabilitation Center	3090	3216	3640	4470
University Hospital	2940	3492	3850	4470
Total number in dept.	2.0	2.6	1.1	1.2
Total number qualified**	1.3	2.2	1.0	1.0
Per cent offering vacation				
2 weeks	42	50	20	35
3 weeks	54	25	34	30
4 weeks	4	25	46	35
Per cent requiring 40-hr. work week	78	80	83	94
Per cent offering periodic increment	78	70	69	82
Per cent of returns used in analysis	75	100	85	40

* Applies to **physical** therapists only.

** Member of American Registry of Physical Therapists, American Physical Therapy Association, or state registered.

Table 2: Per cent of listed personnel policies offered

Blue Cross only	14.5
Blue Cross and Blue Shield (or similar plan)	38
Insurance policy	27
Retirement plan	53
Uniforms furnished	12
Uniforms laundered	62
Paid holidays	100*
Paid sick leave	100**
Discount on medical care	55***
Meals	10
Housing	14
Bonus	4

* 8.3 average paid holidays per year
** 11.0 average paid sick leave days — year
*** 50% average discount on medical care

Table 3: Per cent of specific employment conditions

Preference to creed	None
Preference to sex	18
Employs part-time personnel	25
Requires overtime (without pay)	24
Salaries governed by other agencies	36

Miscellaneous Information

Four states in Group I require and/or encourage state registration. Agencies governing salary policies are Civil Service Commission, Congress of the United States, and State Legislature.

Educational facilities offered personnel in this group are in-service training program; college courses offered by affiliated university or paid by the institution; periodic lectures; staff conferences/meetings; scientific films, and nursing school.

GROUP II

Delaware, District of Columbia, Maryland, New Jersey, New York, Ohio, Pennsylvania.

QUESTIONNAIRES

637 questionnaires mailed:
41 per cent replied;
77 per cent of replies used in survey.

Greatest number of beds reported	8000	
Smallest number of beds reported	100	
AVERAGE		630.5 beds
Largest daily load in PT Dept.	300	
Smallest daily load in PT Dept.	6	
AVERAGE		40.6 patient visits

Table 1: Average beginning salaries in each listed category and basic employment information

	Starting Therapist*	Experienced Therapist*	Chief Therapist*	Supervisor*
Private Hospital	$3234	$3767	$4194	$4533
General Hospital	3366	3811	4647	5222
Community Hospital	3337	3864	4550	4957
Rehabilitation Center	3481	3733	4625	5090
University Hospital	3490	3767	4180	4500
Total number in dept.	2.2	2.5	1.1	1.1
Total number qualified**	1.4	1.7	1.0	0.94
Per cent offering vacation				
2 weeks	59	42	25	23
3 weeks	9	27	30	21
4 weeks	32	31	45	56
Per cent requiring 40-hr. work week	80	79	80	83
Per cent offering periodic increment	70	67	55	67
Per cent of returns used in analysis	45	77	71	29

* Applies to physical therapists only.
** Member of American Registry of Physical Therapists, American Physical Therapy Association, or state registered.

Table 2: Per cent of listed personnel policies offered

Blue Cross only	14
Blue Cross/Blue Shield Plan (or similar plan)	32
Insurance policy	30
Retirement plan	62
Uniforms furnished	16
Uniforms laundered	67
Paid holidays	99*
Paid sick leave	96**
Discount on medical care	60***
Meals	33
Housing	8
Bonus	3

* 7 average paid holidays per year
** 10.7 average paid sick leave days — year
*** 39% average discount on medical care

Table 3: Per cent of specific employment conditions

Preference to creed	None
Preference to sex	10
Employs part-time personnel	18
Requires overtime (without pay)	25
Salaries governed by other agencies	22

Miscellaneous Information

Five states and District of Columbia in Group II require and/or encourage state registration. Agencies governing salary policies are Civil Service Commission, Congress of the United States, State Legislature, City Government, Community Chest, City Hospital Council, and American Physical Therapy Association.

Educational facilities offered personnel in this group are in-service training program; college courses offered by affiliated university or paid by institution; periodic lectures; staff conferences/meetings; scientific films; medical library; clinics; seminars; nursing school; state and national institutes, and detailed educational leaves.

GROUP III

Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, West Virginia.

QUESTIONNAIRES

390 questionnaires mailed:
39 per cent replied;
64 per cent of replies used in survey.

Greatest number of beds reported	4472	
Smallest number of beds reported	100	
AVERAGE		473 beds
Largest daily load in PT Dept.	250	
Smallest daily load in PT Dept.	6	
AVERAGE		35.8 patient visits

Table 1: Average beginning salaries in each listed category and basic employment information

	Starting Therapist*	Experienced Therapist*	Chief Therapist*	Supervisor*
Private Hospital	$3145	$3720	$4120	$4320
General Hospital	3455	4115	4639	5253
Community Hospital	3388	3756	3896	3906
Rehabilitation Center	3175	3968	4780	5231
University Hospital	3406	3808	4335	4540
Total number in dept.	1.7	2.0	1.1	1.3
Total number qualified**	1.1	1.5	0.92	1.0
Per cent offering vacation				
2 weeks	41	33	24	35
3 weeks	41	38	28	26
4 weeks	18	29	48	39
Per cent requiring 40-hr. work week	67	74	75	68
Per cent offering periodic increment	60	67	50	50
Per cent of returns used in analysis	41	63	73	35

* Applies to **physical** therapists only.
** Member of American Registry of Physical Therapists, American Physical Therapy Association, or state registered.

Table 2: Per cent of listed personnel policies offered

Blue Cross only	18
Blue Cross/Blue Shield Plan (or similar plan)	26
Insurance policy	41
Retirement plan	68
Uniforms furnished	18
Uniforms laundered	74
Paid holidays	98*
Paid sick leave	95**
Discount on medical care	54***
Meals	25
Housing	9
Bonus	None

* 6.6 average paid holidays per year
** 12.8 average paid sick leave days — year
*** 41% average discount on medical care

Table 3: Per cent of specific employment conditions

Preference to creed	7
Preference to sex	10
Employs part-time personnel	11
Requires overtime (without pay)	30
Salaries governed by other agencies	27

Miscellaneous Information

Ten states in Group III require and/or encourage state registration. Agencies governing salary policies are Civil Service Commission, Congress of the United States, State Legislature, City Government, and American Physical Therapy Association.

Educational facilities offered personnel in this group are in-service training program; college courses offered by affiliated university or paid by institution; periodic lectures; staff conferences/meetings; scientific films; medical library; seminars; nursing school, and educational leaves.

GROUP IV

Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Wisconsin.

QUESTIONNAIRES

478 questionnaires mailed:
48 per cent replied;
76 per cent of replies used in survey.

Greatest number of beds reported	5000	
Smallest number of beds reported	100	
AVERAGE		415.8 beds
Largest daily load in PT Dept.	408	
Smallest daily load in PT Dept.	1	
AVERAGE		41.9 patient visits

Table 1: Average beginning salaries in each listed category and basic employment information

	Starting Therapist*	Experienced Therapist*	Chief Therapist*	Supervisor*
Private Hospital	$3207	$3974	$4563	$4913
General Hospital	3340	4015	4621	4966
Community Hospital	3743	4089	4711	6000***
Rehabilitation Center	3195	3898	4683	5156
University Hospital	3216	3663	4116	4335
Total number in dept.	2.3	2.0	1.1	1.6
Total number qualified**	1.7	1.7	.98	1.6
Per cent offering vacation				
2 weeks	73	52	32	34
3 weeks	22	34	24	26
4 weeks	5	14	44	40
Per cent requiring 40-hr. work week	83	86	82	87
Per cent offering periodic increment	55	70	62	68
Per cent of returns used in analysis	47	78	81	25

* Applies to **physical** therapist only.
** Member of American Registry of Physical Therapists, American Physical Therapy Association, or state registered.
*** Only 1 reply tabulated for particular type hospital in area.

Table 2: Per cent of listed personnel policies offered

Blue Cross only	8
Blue Cross/Blue Shield Plan (or similar plan)	54
Insurance policy	31
Retirement plan	61
Uniforms furnished	13
Uniforms laundered	55
Paid holidays	98*
Paid sick leave	94**
Discount on medical care	75***
Meals	20
Housing	6
Bonus	3

* 6.6 average paid holidays per year
** 11.8 average paid sick leave days — year
*** 31% average discount on medical care

Table 3: Per cent of specific employment conditions

Preference to creed	1
Preference to sex	10
Employs part-time personnel	30
Requires overtime (without pay)	19
Salaries governed by other agencies	18

Miscellaneous Information

All states in Group IV require and/or encourage state registration. Agencies governing salary policies are Civil Service Commission, Congress of the United States, State Legislature, City Government, Easter Seal Society, and Public Health Service.

Educational facilities offered personnel in this group are in-service training program; college courses offered by affiliated university or paid by institution; scholarships; periodic lectures, staff conferences/meetings; scientific films; medical library; clinics; nursing school, and national and state institutes.

GROUP V

Idaho, Kansas, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, Utah, Wyoming.

QUESTIONNAIRES

145 questionnaires mailed:
52 per cent replied;
80 per cent of replies used in survey.

Greatest number of beds reported	1550	
Smallest number of beds reported	100	
AVERAGE		329 beds
Largest daily load in PT Dept.	70	
Smallest daily load in PT Dept.	2	
AVERAGE		23.6 patient visits

Table 1: Average beginning salaries in each listed category and basic employment information

	Starting Therapist*	Experienced Therapist*	Chief Therapist*	Supervisor*
Private Hospital	$3600	$4131	$4357	$4800***
General Hospital	3158	4478	4654	4908
Community Hospital	3095	4332	4678	—
Rehabilitation Center	3675	4167	4900	5100
University Hospital	3577	3995	4800	4950
Total number in dept.	1.4	1.4	1.0	1.0
Total number qualified**	0.85	1.3	0.89	1.0
Per cent offering vacation				
2 weeks	87	63	48	56
3 weeks	13	30	33	22
4 weeks	—	7	19	22
Per cent requiring 40-hr. work week	69	65	71	36
Per cent offering periodic increment	69	52	42	25
Per cent of returns used in analysis	33	57	70	13

* Applies to **physical** therapist only.
** Member of American Registry of Physical Therapists, American Physical Therapy Association, or state registered.
*** Only 1 reply tabulated for particular type hospital in area.

Table 2: Per cent of listed personnel policies offered

Blue Cross only	15
Blue Cross/Blue Shield Plan (or similar plan)	29
Insurance policy	20
Retirement plan	64
Uniforms furnished	14
Uniforms laundered	66
Paid holidays	100*
Paid sick leave	97**
Discount on medical care	54***
Meals	7
Housing	3
Bonus	8

* 6.4 average paid holidays per year
** 11.5 average paid sick leave days — year
*** 29% average discount on medical care

Table 3: Per cent of specific employment conditions

Preference to creed	None
Preference to sex	7
Employs part-time personnel	36
Requires overtime (without pay)	27
Salaries governed by other agencies	27

Miscellaneous Information

Three states in Group V require and/or encourage state registration. Agencies governing salary policies are Civil Service Commission, Congress of the United States, VA Central Office, State Legislature, and local pay scales.

Educational facilities offered personnel in this group are in-service training program; university extension courses; scholarships; periodic lectures; scientific films; medical library; staff meetings, and state and local conferences.

GROUP VI

Arizona, California, Colorado, Nevada, Oregon, Texas, Washington.

QUESTIONNAIRES

297 questionnaires mailed:
52 per cent replied;
90 per cent of replies used in survey.

Greatest number of beds reported	6000	
Smallest number of beds reported	100	
AVERAGE		688.8 beds
Largest daily load in PT Dept.	300	
Smallest daily load in PT Dept.	5	
AVERAGE		46.9 patient visits

Table 1: Average beginning salaries in each listed category and basic employment information

	Starting Therapist*	Experienced Therapist*	Chief Therapist*	Supervisor*
Private Hospital	$3677	$4025	$4701	$4800
General Hospital	3654	4081	4748	4905
Community Hospital	3915	4125	4506	4773
Rehabilitation Center	4010	4099	4587	4750
University Hospital	3664	3985	4668	4785
Total number in dept.	2.0	2.7	1.1	1.4
Total number qualified**	1.9	2.4	0.99	1.2
Per cent offering vacation				
2 weeks	74	58	42	44
3 weeks	19	27	38	34
4 weeks	7	15	20	22
Per cent requiring 40-hr. work week	95	91	88	91
Per cent offering periodic increment	68	66	57	61
Per cent of returns used in analysis	41	91	74	33

* Applies to physical therapist only.
** Member of American Registry of Physical Therapists, American Physical Therapy Association, or state registered.

Table 2: Per cent of listed personnel policies offered

Blue Cross only	24
Blue Cross/Blue Shield Plan (or similar plan)	27
Insurance policy	32
Retirement plan	64
Uniforms furnished	16
Uniforms laundered	56
Paid holidays	100*
Paid sick leave	100**
Discount on medical care	53***
Meals	12
Housing	10
Bonus	None

* 7.2 average paid holidays per year
** 12.8 average paid sick leave days — year
*** 28% average discount on medical care

Table 3: Per cent of specific employment conditions

Preference to creed	None
Preference to sex	6
Employs part-time personnel	16
Requires overtime (without pay)	12
Salaries governed by other agencies	41

Miscellaneous Information

Five states in Group VI require and/or encourage state registration. Agencies governing salary policies are Civil Service Commission, Congress of the United States, State Legislature, County Board of Supervisors, Community Chest, City Hospital Council, and VA Central Office.

Educational facilities offered personnel in this group are in-service training program; USAF educational program; refresher courses; conventions; institutes; periodic lectures; scientific films; medical library; clinics, and nursing school.

GROUP VII

Canada, Hawaii, Puerto Rico.

QUESTIONNAIRES

95 questionnaires mailed:
33 per cent replied;
76 per cent of replies used in survey.

All employment categories (private hospital, general hospital, community hospital, rehabilitation center and university hospital) were contacted in Group VII study; however, replies from private and general hospitals **only** *were used in the final tabulation.*

Greatest number of beds reported	1288	
Smallest number of beds reported	100	
AVERAGE		423 beds
Largest daily load in PT Dept.	140	
Smallest daily load in PT Dept.	9	
AVERAGE		38.5 patient visits

Table 1: Average beginning salaries in each listed category and basic employment information

CANADA	Starting Therapist*	Experienced Therapist*	Chief Therapist*	Supervisor*
Private Hospital	$2540	$2880	$3180	——
General Hospital	2625	2880	3137	——
Total number in dept.	1.8	3.1	1.0	
Total number qualified**	1.7	2.7	1.0	
Per cent offering vacation				
3 weeks	20	29	50	
4 weeks	80	71	50	
Per cent requiring 40-hr. work week	62	70	50	
Per cent offering periodic increment	85	78	82	
Per cent of returns used in analysis	50	57	71	

* Applies to **physical** therapist only.
** Member of Canadian Physiotherapy Association and/or registered within province.

HAWAII	Starting Therapist*	Experienced Therapist*	Chief Therapist*	Supervisor*
Private Hospital	$3420	$3600	$4200	——
General Hospital	—	3900	4230	——
Total number in dept.	2.0	4.0	1.0	
Total number qualified**	—	4.0	1.0	
Per cent offering vacation				
2 weeks	—	50	20	
3 weeks	—	—	40	
4 weeks	100	50	40	
Per cent requiring 40-hr. work week	100	100	100	
Per cent offering periodic increment	100	100	100	
Per cent of returns used in analysis	20	40	100	

* Applies to **physical** therapist only.
** Member of American Registry of Physical Therapists, American Physical Therapy Association, or registered within territory.

PUERTO RICO	Starting Therapist*	Experienced Therapist*	Chief Therapist*	Supervisor*
Private Hospital	$2700	$——	——	——
General Hospital	2160	2616	——	——
Total number in dept.	1.0	1.0		
Total number qualified**	0.5	1.0		
Per cent offering vacation				
2 weeks	——	34		
3 weeks	——	33		
4 weeks	100	33		
Per cent requiring 40-hr. work week	50	100		
Per cent offering periodic increment	50	20		
Per cent of returns used in analysis	40	60		

* Applies to physical therapist only.
** Member of American Registry of Physical Therapists or American Physical Therapy Association.

Table 2: Per cent of listed personnel policies offered

Blue Cross only	36
Blue Cross/Blue Shield (or similar plan)	8
Insurance policy	36
Retirement plan	64
Uniforms furnished	12
Uniforms laundered	76
Paid holidays	100*
Paid sick leave	100**
Discount on medical care	60***
Meals	40

* 7.4 average paid holidays per year
** 12.6 average paid sick leave days — year
*** 46% average discount on medical care

Table 3: Per cent of specific employment conditions

Preference to creed	None
Preference to sex	28
Requires overtime (without pay)	36
Salaries governed by other agencies	52

Miscellaneous Information

All three areas in Group VII require and/or encourage registration. Agencies governing salary policies are Civil Service Commission, Canadian Physiotherapy Association and Commonwealth of Puerto Rico.

Educational facilities offered personnel in this group are in-service training program; scholarships for post-graduate courses; periodic lectures; staff meetings, and medical library.

Geographic Distribution of Members of the American Registry of Physical Therapists

Alabama

Ardmore	1
Bessemer	1
Birmingham	10
Brantley	1
Eden	1
Fairhope	1
Ft. Rucker	1
Gadsden	1
Geneva	1
Mobile	3
Montgomery	6
Prattville	1
Tuscaloosa	1
Tuskegee	9
	38

Arizona

Cortaro	1
Flagstaff	2
Ft. Huachuca	1
Phoenix	35
Prescott	3
Tempie	1
Tucson	24
Wickenburg	1
Yuma	2
	70

Arkansas

Fayetteville	1
Ft. Chaffee	4
Ft. Smith	2
Hope	1
Hot Springs	5
Jacksonville	1
Jonesboro	1
Little Rock	7
N. Little Rock	1
Pocahontas	1
Springdale	1
Texarkana	1
	26

California

Acton	1
Agnew	1
Alameda	2
Albany	2
Alhambra	2
Alpaugh	1
Altadena	6
Anaheim	8
Angwin	1
Antioch	3
Arcadia	6
Arcata	2
Arlington	3
Artesia	1
Auburn	1
Azusa	1
Bakersfield	10
Balboa	2
Bell	1
Bell Gardens	1
Belmont	2
Berkeley	23
Beverly Hills	3
Brawley	2
Buena Park	2
Burbank	2
Burlingame	5
Camarillo	3
Camino	1
Campbell	3
Camp Pendleton	3
Canoga Park	4
Carmel	2
Carmichael	1
Castro Valley	3
Ceres	1
Chatsworth	1
Chico	1
Claremont	3
Coarsegold	1
Colma	1
Compton	4
Concord	8
Corona	3
Coronado	3
Courte Madera	2
Covina	2
Culver City	6
Cupertino	2
Cypress	1
Daly City	5
Danville	1
Davis	1
Delano	1
Dixon	1
Downey	7
Duarte	3
E. Richmond Hts.	1
El Cajon	2
El Centro	2
El Cerrito	5
El Monte	3
Encinitas	1
Encino	3
Eureka	5
Exeter	1
Fallbrook	1
Ferndale	1
Fontana	3
Ft. Ord	1
Fowler	1
French Camp	1
Fresno	21
Fullerton	3
Gardena	2
Garden Grove	9
Glendale	14
Glendora	1
Goleta	1
Granada Hills	3
Guadalupe	1
Hanford	2
Harbor City	1
Hayward	5
Hemet	1
Hermosa Beach	2
Highland	1
Hollister	1
Hollywood	7
Hondo	6
Idyllwild	1
Independence	1
Indio	1
Inglewood	4
Kentfield	2
La Canada	4
La Crescenta	3
Lafayette	2
Laguna Beach	1
La Habra	2
La Jolla	2
Lakeport	1
Lake Tahoe	1
Lakewood	3
La Mesa	2
La Mirada	1
Lancaster	2
Larkspur	1
Lathrop	1
Litchfield	1
Livermore	1
Livingston	1
Lodi	1
Loma Linda	9
Long Beach	32
Los Altos	9
Los Angeles	147
Los Gatos	1
Madera	1
Madrone	1
Malibu	3
Mammoth Lakes	1
Manhattan Beach	5
March AFB	1
Marina	2
Marysville	2
Menlo Park	8
Merced	4
Mill Valley	6
Modesto	7
Monrovia	2
Montebello	1
Monterey	4
Morgan Hill	1
Mountain View	5
Napa	4
National City	2
Newhall	1
Newport Beach	2
North Hollywood	7
Northridge	2
Norwalk	2
Oakdale	2
Oakland	29
Oceanside	3
Oildale	1
Ojai	1
Olive View	1
Ontario	2
Oranse	1
Orinda	1
Oroville	2
Oxnard	4
Pacific Palisades	5
Palm Springs	3
Palo Alto	29
Paradise	1
Parks AFB	3
Pasadena	16
Paso Robles	2
Patterson	1
Pebble Beach	1
Philadelphia	1
Pine Grove	1
Placentia	1
Pleasant Hill	2
Pomona	6
Pope Valley	1
Rancho Sante Fe	2
Redlands	2
Redondo Beach	3
Redwood City	4
Reedley	2
Reseda	2
Richmond	6
Rivera	3
Riverside	7
Rodeo	1
Rolling Hills	1
Sacramento	20
St. Helena	1
St. Helena Hts.	1
Salinas	3
San Bernardino	7
San Bruno	1
San Carlos	3
San Diego	48
San Fernando	3

San Francisco	122
San Gabriel	5
Sanitarium	2
San Jose	16
San Juan Baptista	1
San Leandro	3
San Lorenzo	3
San Luis Obispo	4
San Mateo	7
San Pablo	1
San Pedro	4
San Rafael	7
Santa Ana	8
Santa Barbara	9
Santa Clara	1
Santa Cruz	3
Santa Monica	16
Santa Rosa	5
Saratoga	3
Sausalito	4
Scotia	1
Seaside	1
Sebastopol	2
Sharp Park	3
Sherman Oaks	6
Soledad	2
Solvang	2
Sonoma	1
South Gate	8
South Pasadena	2
South San Francisco	1
Spring Valley	3
Stanford	3
Stockton	8
Studio City	1
Sunnyvale	1
Sun Valley	1
Taft	2
Tarzana	2
Thermal	1
Tiburon	1
Torrance	8
Tracy	1
Travis AFB	2
Tujunga	1
Turlock	1
Ukiah	2
Vacaville	2
Vallejo	4
Van Nuys	13
Venice	2
Ventura	4
Victorville	2
Visalia	3
Walnut Creek	5
Watsonville	3
West Covina	2
West Los Angeles	4
Whittier	18
Willits	1
Willows	1
Woodland	1
Woodside	1
Yuba City	1
Yucaipa	1
	1187

Colorado

Agate	1
Arvada	1
Aurora	2
Bayfield	1
Boulder	7
Brush	1
Camp Hale	1
Cascade	1
Colorado Spgs.	10
Craig	1
Denver	85
Derby	1
Edgewater	1
Englewood	1
Estes Park	1
Ft. Carson	1
Ft. Collins	2
Ft. Lupton	2
Ft. Lyon	1
Georgetown	1
Golden	4
Grand Junction	3
Greeley	3
Gunnison	3
La Junta	1
Lakewood	1
Las Animas	1
Loretto	1
Loveland	1
Lowry AFB	2
Manitou Spgs.	1
Meeker	1
Montrose	1
Pueblo	6
Rangely	1
Sterling	2
Trinidad	1
Walsenburg	1
Wheat Ridge	1
	157

Connecticut

Avon	1
Bethany	1
Bloomfield	1
Branford	1
Bridgeport	7
Cheshire	3
Clinton	1
Cos Cob	1
Danbury	2
Danielson	1
Darien	1
Devon	1
East Hampton	1
East Hartford	1
Elmwood	1
Essex	1
Fairfield	1
Farmington	1
Gales Ferry	1
Glastonbury	4
Goshen	1
Granby	2
Greenwich	1
Hamden	4
Hartford	13
Ivoryton	1
Kensington	1
Lebanon	1
Manchester	5
Melrose	1
Meriden	3
Middleton	1
Milford	4
Mystic	2
Naugatuck	2
New Britain	6
New Canaan	1
New Haven	19
Newington	6
New London	2
New Milford	1
North Haven	1
North Windham	1
Norwalk	2
Norwich	2
Norwichtown	1
Old Saybrook	1
Orange	3
Plainville	1
Riverside	1
Rockville	2
Rocky Hill	5
Sandy Hook	1
Seymour	1
Simsbury	1
South Coventry	1
Southington	1
South Norwalk	1
Southport	1
Springdale	1
Stamford	8
Stonington	1
Storrs	2
Stratford	4
Suffield	1
Taftville	1
Terryville	1
Thompson	1
Thompsonville	1
Torrington	3
Trumbull	5
Wallingford	4
Waterbury	6
Waterford	1
Watertown	1
West Hartford	5
West Haven	5
West Mystic	1
Wethersfield	4
Willimantic	2
Windsor Locks	2
Winsted	1
Woodbridge	1
Woodmont	1
	199

Delaware

Claymont	1
Dover	3
Farnhurst	1
Laurel	1
Marshallton	1
Milford	1
Newark	1
New Castle	3
Seaford	1
Wilmington	19
	32

District of Columbia

	63

Florida

Arlington	1
Avon Park	2
Bartow	1
Bay Pines	2
Bee Ridge	1
Belle Glade	1
Bradenton	3
Clearwater	4
Coral Gables	7
Dania	1
Daytona Beach	4
Eglin AFB	1
Eustis	1
Ft. Lauderdale	9
Gainesville	2
Gulfport	1
Hialeah	1
Hollywood	4
Immokalee	1
Indian Rocks Beach	1
Jacksonville	8
Jacksonville Beach	1
Key West	1
Kissimmee	1
Lake City	1
Lakeland	2
Lake Worth	1
Lynn Haven	1
Melbourne	2
Merritt Island	1
Miami	26
Miami Beach	2
New Smyrna Beach	1
North Miami	1
Orlando	9
Palm Beach	2
Pensacola	3

Pompano Beach	1
Port Orange	1
Richmond Hts.	1
Rockledge	1
St. Petersburg	12
Sarasota	9
Tallahassee	6
Tampa	6
Umatilla	2
Warrington	1
West Miami	1
West Palm Beach	1
Winterhaven	2
Winter Park	1
	156

Georgia

Albany	1
Americus	1
Athens	1
Atlanta	11
Augusta	8
Brunswick	1
College Park	1
Columbus	6
Decatur	4
Dublin	3
Duluth	1
Emory University	2
Fairburn	1
Ft. Benning	7
Ft. Gordon	1
Ft. McPherson	2
LaGrange	1
Leslie	1
Macon	11
Marietta	1
Moultrie	1
Sapelo Island	1
Savannah	2
Valdosta	1
Warm Springs	23
	93

Idaho

Blackfoot	1
Boise	7
Buhl	1
Jerome	1
Lewiston	1
Moscow	2
Nampa	1
New Plymouth	1
Pocatello	1
Ririe	1
Twin Falls	2
	19

Illinois

Aledo	1
Algonquin	1
Alton	6
Aurora	4
Batavia	1
Belleville	8
Bellwood	4
Bensenville	1
Berwyn	4
Bloomington	2
Blue Island	1
Brookfield	1
Canton	1
Champaign	1
Chanute AFB	1
Chicago	158
Cicero	1
Clarendon Hills	2
Crystal Lake	1
Danville	1
Decatur	4
Deerfield	1
De Kalb	1
Des Plaines	1
Dixon	3
Downers Grove	2
Downey	3
Dundee	1
East Alton	1
East Moline	1
East St. Louis	4
Edinburg	1
Effingham	1
Elgin	3
Elmhurst	6
Elmwood Park	1
Evanston	18
Fairfield	1
Geneva	1
Glencoe	2
Glen Ellyn	3
Glenview	2
Grayslake	1
Great Lakes	3
Gurnee	1
Harmon	1
Hazelcrest	1
Highland Park	3
Hillside	1
Hines	3
Hinsdale	6
Homewood	2
Joliet	5
La Grange	2
La Grange Park	1
LaSalle	1
Lawrenceville	2
Libertyville	1
Litchfield	2
Lockport	2
Lombard	2
Maple Park	1
Marengo	1
Marion	1
Mattoon	1
Maywood	3
Moline	2
Morton Grove	1
Normal	2
Northbrook	2
Oaklawn	1
Oak Park	6
Olney	1
Palos Park	1
Park Ridge	2
Pekin	1
Peoria	13
Peru	1
Petersburg	1
Polo	2
Princeton	1
Quincy	3
Rantoul	1
Red Bud	1
River Forest	1
Rockford	13
Rock Island	5
Schiller Park	1
Scott AFB	1
Sheldon	1
Shirland	1
Skokie	4
Springfield	7
Spring Valley	1
Sterling	2
Streator	1
Taylorville	1
Thornton	1
Urbana	3
Vandalia	2
Villa Park	1
Waterman	1
Waukegan	3
Westchester	1
West Frankfort	1
Wheaton	1
Wilmette	2
Winnetka	1
Woodstock	1
Worth	1
	408

Indiana

Alexandria	1
Anderson	1
Beechgrove	2
Bloomington	2
Bluffton	1
Brazil	1
Bremen	1
Brownsburg	1
Butlerville	1
Cambridge City	1
Camden	1
Campbellsburg	1
Clarksville	1
Columbus	1
Crawfordsville	1
Cross Plains	1
Crown Point	1
East Chicago	2
Elkhart	1
Evansville	4
Ft. Benj. Harrison	1
Ft. Wayne	9
Frankfort	2
Gary	5
Hammond	2
Indianapolis	32
Kendallville	1
Knox	1
Kokomo	3
Lafayette	3
Lapel	1
Logansport	1
Marion	3
Michigan City	2
Mishawaka	1
Mt. Vernon	1
Muncie	1
New Albany	1
New Augusta	1
New Salisbury	1
New Trenton	1
Osceola	1
Oxford	1
Richmond	1
St. Mary of the Woods	1
Sellersburg	1
South Bend	10
Terre Haute	2
Valparaiso	3
Vincennes	1
West Lafayette	1
Whiting	1
	122

Iowa

Altoona	1
Brooklyn	1
Burlington	1
Cedar Falls	3
Cedar Rapids	3
Clinton	2
Coralville	1
Davenport	6
Decorah	1
Des Moines	15
Dubuque	2
Estherville	1
Ft. Dodge	1

Iowa City 24
Jewell 1
Knoxville 1
La Mars 1
Mapleton 1
Marshalltown 2
Mason City 1
Melcher 1
Montezuma 1
Mt. Auburn 1
Moville 1
Norwalk 1
Onawa 1
Ottumwa 2
Postville 1
Primghar 1
Sioux City 6
Sully 1
Sutherland 1
Tipton 1
Waterloo 5
Waverly 1
West Des Moines 1
Williamsburg 1
Winifield 1
97

Kansas

Bonner Springs 1
Cedar Bluffs 1
Cedar Vale 1
Clay Center 1
Derby 1
Ellsworth 1
Emporia 2
Ft. Leavenworth 1
Ft. Riley 1
Frankfort 1
Garnett 2
Glasco 1
Great Bend 1
Harper 1
Hutchinson 1
Kansas City 16
Lawrence 10
Leavenworth 4
Manhattan 3
Marysville 1
Merriam 1
Milford 1
Mission 3
Oakley 1
Olathe 1
Overland Park 1
Prairie Village 5
Salina 1
Topeka 8
Turner 1
Utica 1
Wadsworth 2
Wellington 1
Whitewater 1
Wichita 14
Winfield 2
95

Kentucky

Anchorage 1
Ashland 1
Erlanger 1
Fern Creek 1
Ft. Campbell 8
Ft. Knox 5
Ft. Mitchell 1
Ft. Thomas 2
Harlan 2
Henderson 1
Jeffersontown 1
Jersey City 1
Lexington 11
Louisville 20
Middlesboro 2
Paducah 1
Wheelwright 2
56

Louisiana

Alexandria 4
Amite 1
Arabi 1
Baton Rouge 4
Bogalusa 1
Carville 2
Crowley 1
Ft. Polk 1
Haynesville 1
Houma 1
Jackson 1
Lafayette 2
Lake Charles 2
Leesville 1
Metairie 1
Monroe 2
New Orleans 34
Shreveport 11
71

Maine

Bailey's Island 1
Bangor 2
Bath 2
Boothbay Harbor 1
Cape Cottage 1
Cape Elizabeth 1
Ft. Fairfield 1
Freeport 1
Gardiner 1
Houlton 1
New Berwick 1
Portland 1
Steep Falls 1
Waldoboro 1
Waterboro 1
West Minot 1
Winterport 1
19

Maryland

Aberdeen 2
Accokeek 1
Adelphi 1
Annapolis 1
Bainbridge 2
Baltimore 41
Bel Air 1
Bethesda 9
Catonsville 1
Chevy Chase 1
Chillum Terrace 1
College Park 3
Edgewood 1
Edmonston 1
Ft. Howard 1
Ft. Meade 1
Fruitland 1
Hagerstown 1
Hyattsville 1
Kensington 6
Kitzmiller 1
Rockville 5
Ruxton 3
Salisbury 2
Silver Spring 7
Takoma Park 6
Thurmont 1
Towson 1
West Hyattsville 1
104

Massachusetts

Acton 1
Acushnet 1
Adams 1
Agawam 1
Andover 2
Arlington 8
Ashburnham 1
Ashland 1
Athol 2
Attleboro 2
Auburn 2
Auburndale 1
Avon 1
Ballard Vale 1
Bass River 1
Bedford 3
Belmont 1
Boston 29
Bradford 1
Brighton 7
Brockton 7
Brookline 12
Brooklyn 1
Buzzards Bay 1
Cambridge 20
Canton 4
Carver 1
Chelsea 3
Chelmsford 1
Chestnut Hill 4
Concord 3
Dalton 1
Deerfield 1
Dorchester 8
Dover 1
East Longmeadow 1
East Milton 1
East Pepperell 1
Edgartown 1
Everett 1
Fall River 3
Falmouth 1
Fitchburg 4
Florence 1
Foxboro 1
Framingham Center 4
Gardner 1
Gloucester 2
Greenfield 2
Greenwood 1
Groton 1
Hampden 1
Hanover 1
Harvard 1
Haverhill 2
Hingham 2
Holliston 1
Holyoke 2
Hopedale 1
Humarock 1
Hyannis 1
Hyde Park 1
Jamaica Plain 1

Lancaster	1
Lawrence	1
Lexington	1
Littleton	1
Longmeadow	4
Lowell	3
Lunenberg	1
Lynn	1
Lynnfield Center	1
Malden	2
Mansfield	1
Marblehead	1
Mattapan	1
Medfield	1
Medford	4
Melrose	5
Melrose Highlands	1
Millis	1
Milton	4
Minot	1
Montague City	1
Monument Beach	1
Natick	7
Needham	1
Needham Hts.	1
New Bedford	2
Newton	3
Newton Centre	3
Newtonville	2
Nonquitt	1
Norfolk	1
North Adams	2
Northampton	1
North Bellingham	1
North Beverly	1
North Chelmsford	1
North Easton	1
North Quincy	1
North Reading	2
North Weymouth	1
Norwell	1
Norwood	3
Peabody	3
Pittsfield	5
Plymouth	1
Provincetown	1
Quincy	4
Randolph	1
Reading	1
Revere	2
Rowley	1
Roxbury	4
Sharon	1
Sherborn	1
Shrewsbury	2
Southampton	1
South Ashburnham	1
Southbridge	1
South Dartmouth	1
South Easton	1
South Lincoln	1
South Lynnfield	1
South Swansea	1
South Weymouth	1
Springfield	11
Stoneham	1
Stoughton	1
Taunton	1
Tewksbury	1
Turners Falls	1
Tyngsboro	1
Waban	1
Wakefield	3
Walpole	1
Waltham	2
Watertown	1
Wayland	7
Wellesley	6
Wellfleet	1
West Medford	1
Weston	3
West Quincy	1
West Roxbury	3
West Springfield	1
Westwood	3
Weymouth	2
Wilbraham	1
Winchester	4
Winthrop	2
Woburn	2
Wollaston	4
	347

Michigan

Ada	1
Adrian	1
Alpena	1
Ann Arbor	29
Battle Creek	8
Bay City	2
Benton Harbor	1
Berkeley	2
Berrien Springs	2
Birmingham	1
Bloomfield Hills	1
Brighton	1
Charlotte	1
Coldwater	1
Dearborn	12
Delton	1
Detroit	53
Dexter	1
East Ann Arbor	2
East Grand Rapids	1
East Lansing	8
Eloise	1
Escanaba	1
Farmington	10
Ferndale	2
Flint	13
Grand Rapids	23
Grandville	2
Grosse Pointe Farms	1
Grosse Pointe Park	1
Hamtramck	1
Hastings	1
Highland Park	2
Howard City	1
Hudsonville	1
Iron Mountain	2
Iron River	1
Ironwood	1
Ishpeming	1
Jackson	5
Kalamazoo	5
Lansing	12
Lincoln Park	2
Livonia	1
Ludington	1
Lyons	1
Marlette	1
Marquette	3
Marshall	1
Menominee	1
Midland	2
Mt. Clemens	3
Mt. Pleasant	1
Munising	1
Muskegon	4
Muskegon Hts.	2
Niles	1
Oak Park	3
Okemos	1
Plymouth	1
Pontiac	7
Port Huron	3
Reading	1
River Rouge	1
Royal Oak	6
Saginaw	8
St. Clair Shores	1
St. Joseph	4
Sault Ste. Marie	2
South Lyons	1
Taylor Center	1
Temperance	1
Three Oaks	1
Three Rivers	1
Traverse City	1
Warren	1
Williamsburg	1
Wyandotte	1
Ypsilanti	2
	291

Minnesota

Ada	1
Anoka	1
Austin	2
Bovey	1
Buffalo	1
Buhl	1
Chisholm	3
Cloquet	1
Coon Rapids	1
Crookston	1
Dodge Center	1
Duluth	6
Eveleth	1
Faribault	1
Grand Rapids	2
Hayfield	1
Hibbing	1
Hopkins	2
Kasson	1
Mahtomedi	1
Mankato	2
Mapleton	1
Minneapolis	90
Moorhead	2
Nashwauk	1
Northfield	1
North St. Paul	1
Oak Island	1
Rochester	22
Rosemount	1
St. Cloud	4
St. Louis Park	3
St. Paul	31
Stillwater	1
Virginia	2
Waseca	1
White Bear Lake	2
Winona	1
Worthington	1
	198

Mississippi

Biloxi	1
Clarksdale	1
Clermont Harbor	1
Gulfport	1
Hattiesburg	1
Jackson	7
Laurel	1
Long Beach	1
Meridian	1
Vicksburg	5
West Point	1
	21

Missouri

Affton	1
Berkeley	1
Brentwood	2
Canton	1
Clayton	1
Columbia	4
Excelsior Spgs.	1
Ferguson	1
Festus	1
Florissant	1
Ft. Leonard Wood	2
Glendale	1

Harris 1
Hickman Mills 3

Independence 5
Ironton 1

Jennings 2

Kansas City 38
Kirksville 1
Kirkwood 2

Lee's Summit 2
Liberty 1

Manchester 1
Maplewood 2
Mt. Vernon 1

Pleasant Hill 1
Poplar Bluff 1

Richmond Hts. 2

St. Ann 1
St. Joseph 3
St. Louis 58
Sedalia 1
Springfield 6

University City 3

Washington 2
Wellsville 1

156

Montana

Anaconda 1

Billings 7
Butte 3

Chinook 1

Drummond 1

Ekalaka 1

Ft. Harrison 2

Great Falls 3

Helena 4

Kalispell 1

Lewistown 1
Livingston 1

Miles City 1
Missoula 10

Roundup 1

St. Ignatius 1

29

Nebraska

Alliance 1

Cortland 1

Fremont 1

Gering 1
Grand Island 2

Hastings 2

Kearney 1

Lincoln 13
Lodgepole 1

North Platte 2

Omaha 20
Ord 1

Scottsbluff 2
South Omaha 1
Stanton 1

Valentine 1

51

Nevada

Fallon 1

Las Vegas 3

Reno 6

Sparks 1

Winnemucca 1

12

New Hampshire

Barnstead Center 1

Claremont 1
Colebrook 2
Concord 2
Contoocook 1
Conway 1

Dover 3
Durham 1

East Weare 1
Enfield 1

Franklin 1

Greenville 1

Hanover 7

Keene 3

Laconia 1
Lebanon 2
Lisbon 1

Manchester 5

Nashua 2
Newport 1

Penacook 3
Peterborough 1
Portsmouth 4

Rye 1

West Lebanon 1

48

New Jersey

Arlington 2
Atlantic City 1
Audubon 2
Avenel 1

Basking Ridge 1
Bay Head 1
Bayonne 1
Bayville 1
Beachwood 1
Bergenfield 4
Bevans 1
Beverly 1
Bloomfield 4
Boonton 1
Bridgeton 3
Butler 1

Camden 1
Cedar Grove 1
Chatham 1
Clark 1
Cliffside Park 1
Clifton 3
Clinton 1
Closter 2
Collingswood 3
Colonia 1
Columbia 1
Cranbury 2
Cranford 1
Cresskill 2

Demarest 1
Denville 1
Dover 2
Dumont 1

East Orange 6
East Paterson 1
Eatontown 1
Edison 1
Englewood 2
Erlton 1

Fair Haven 1
Fairlawn 1
Far Hills 1
Florham Park 1
Ft. Dix 2
Ft. Lee 2
Franklin Lakes 1

Glen Ridge 2
Glen Rock 1

Hackettstown 1
Hackensack 1
Haddonfield 4
Hasbrouk Hts. 1
Hillside 2
Hohokus 1

Interlaken 2
Irvington 3
Island Hts. 1

Jersey City 5

Lake Hiawatha 1
Linden 1
Little Falls 1
Livingston 1
Long Branch 2
Lyndhurst 1

Madison Park 1
Maplewood 2
Marlton 1
Maywood 1
Merchantville 2
Metuchen 1
Midland Park 1
Milltown 1
Millville 1
Montclair 1
Morristown 1
Mountain Lakes 1
Mountainside 1

Neptune 1
Newark 14
New Brunswick 3
Newfoundland 1
New Milford 2
New Providence 1
New Shrewsbury 1
Newton 1
North Arlington 1
North Bergen 2
North Brunswick 1
North Plainfield 1
Nutley 2

Oaklyn 1
Old Bridge 1
Orange 3

Palisade 1
Palisades Park 1
Park Ridge 1
Passaic 1
Paterson 4
Pemberton 1
Penns Grove 1
Plainfield 5
Pompton Plains 1
Princeton 3

Rahway 1
Ridgewood 2
Rumson 2
Rutherford 4

Short Hills 2
Somerdale 1
Somers Point 2
Somerville 5
South Amboy 1
South Orange 1
South Plainfield 1
Sparta 1
Springfield 2
Summit 2

Teaneck 1
Titusville 1
Trenton 3

Union 3
Upper Montclair 1

Ventnor 1
Verona 1

West Allenhurst	1
West Englewood	2
Westfield	2
West Long Branch	1
West Orange	1
Woodbridge	3
Woodbury Hts.	1
Woodstown	1
	225

New Mexico

Alamagordo	1
Albuquerque	22
Clovis	2
Farmington	1
Fruitland	1
Hobbs	1
Los Alamos	1
Montezuma	1
Roswell	1
Santa Fe	1
Taos	1
Truth or Consequences	4
White Sands Proving Grounds	1
	38

New York

Adams	1
Akron	1
Albany	16
Albion	1
Alfred	1
Amherst	1
Amsterdam	2
Auburn	1
Babylon	4
Baldwin	1
Baldwinsville	1
Ballston Lake	1
Batavia	1
Bath	3
Bay Shore	1
Bayside	1
Beacon	2
Belle Harbor	1
Bellmore	1
Big Moose	1
Binghamton	5
Blasdell	1
Bronxville	1
Brooklyn	56
Buffalo	50
Byron	1
Caledonia	1
Canandaigua	1
Carmel	1
Castle Point	1
Catskill	1
Chappaqua	2
Cheektowaga	2
Clifton Spgs.	1
Cohoes	1
Commack	1
Cooperstown	2
Corning	1
Cortland	2
Croqseyville	1
Croton on Hudson	1
Depew	1
De Witt	2
Douglaston	2
Duanesburg	1
East Islip	1
East Meadow	6
East Norwich	2
Eggertsville	1
Elmhurst	3
Elmira	1
Endicott	1
Fairport	2
Falconer	1
Farmingdale	2
Far Rockaway	1
Fishkill	1
Flushing	4
Forest Hills	11
Franklin Sq.	1
Fredonia	2
Freeport	3
Fresh Meadows	2
Fulton	2
Garden City	4
Garnerville	1
Geneva	2
Glen Aubrey	1
Glen Cove	1
Glens Falls	1
Gowanda	1
Grand Island	1
Great Neck	4
Hamburg	1
Hastings on Hudson	2
Hempstead	2
Hewlett	1
Hicksville	2
Highland Falls	1
Hollis	1
Howes Cave	1
Hudson	1
Hudson Falls	1
Huntington	4
Islip	1
Ithaca	2
Jamaica	2
Jamestown	3
Johnson City	2
Johnstown	2
Katonah	2
Kenmore	7
Kew Gardens	4
Kingston	3
Lackawanna	2
Lancaster	1
Larchmont	2
Le Roy	1
Levittown	4
Lewiston	1
Liberty	1
Lima	1
Lincolndale	1
Lindenhurst	1
Long Island	1
Lycoming	1
Malverne	1
Mamaroneck	3
Massapequa	1
Maulius	1
McGraw	1
Merrick	2
Middleport	1
Middletown	1
Milford	1
Miller Place	1
Mineola	3
Montour Falls	1
Mt. Kisco	1
Mt. Vernon	6
Newburgh	4
New Hartford	1
New Paltz	1
New Rochelle	5
New York City	168
Niagara Falls	4
North Hackensack	1
North Lawrence	1
North Massapequa	1
Northport	1
North Syracuse	1
North Tarrytown	1
North Tonawanda	3
Nyack	2
Olean	1
Oneonta	2
Orangeburg	1
Orchard Park	1
Patchogue	1
Pearl River	2
Peekskill	4
Pelham	1
Pelham Manor	1
Penfield	1
Penn Yan	2
Perry	1
Peru	1
Pine City	1
Plainview	1
Pleasant Valley	1
Port Chester	1
Port Jefferson	2
Port Washington	1
Poughkeepsie	2
Queens Village	3
Ravena	1
Riverdale	2
Rochester	24
Rockville Centre	2
Ronkonkoma	1
Roosevelt	2
Roslyn Hts.	2
St. Albans	7
Salamanca	1
Saranac Lake	2
Scarsdale	6
Schenectady	12
Scotia	2
Selden	1
Shrub Oak	1
Slingerlands	1
Snyder	2
Solvay	1
Southampton	1
South Nyack	1
Springfield Garden	1
Staten Island	7
Stony Point	3
Suffern	2
Sunmount	1
Syosset	5
Syracuse	15
Tappan	1
Tonawanda	3
Troy	3
Utica	2
Valhalla	1
Vestal	2
Wantagh	3
Wappingers Falls	2
Warsaw	1
Waterport	1
Watertown	1
Watervliet	1
Westbury	2
Westhampton	1
West Haverstraw	12
West Hempstead	2
West Point	1
White Plains	9
Whitestone	1
Williamsville	3
Woodside	3
Yonkers	6
Yorktown Hts.	2
	724

North Carolina

Asheville	7
Black Mountain	1
Camp LeJeune	1
Chapel Hill	8
Charlotte	14
Cleveland	1
Concord	1
Durham	15
Edenton	2
Elizabeth City	1
Fayetteville	3
Ft. Bragg	7
Gastonia	3
Gibsonville	1
Greensboro	5
Greenville	1
Hendersonville	1
Hickory	2
High Point	2
Jacksonville	1
Jamestown	1
Lawndale	1
Leaksville	1

Lexington	1
Louisburg	1
Mebane	1
Monroe	1
New Bern	1
Otsen	1
Pink Hill	1
Raleigh	3
Rockwell	1
Rocky Mount	1
Salisbury	2
Sanford	1
Southern Pines	1
Stony Point	1
Swannanoa	1
Tarawa Terrace	1
Winston-Salem	3
	102

North Dakota

Bismarck	2
Burnstad	1
Clyde	1
Fargo	2
Grand Forks	2
Granville	1
Jamestown	2
Minot	5
Valley City	1
	17

Ohio

Akron	16
Alliance	4
Amherst	1
Ashtabula	3
Avon	1
Avon Lake	1
Bedford	1
Bellefontaine	1
Bowling Green	1
Brecksville	2
Brewster	1
Brookfield	1
Bucyrus	1
Cambridge	1
Canal Winchester	1
Canton	5
Cardington	1
Carlisle	1
Chagrin Falls	5
Chardon	2
Chesterland	1
Chillicothe	1
Cincinnati	34
Cleveland	57
Cleveland Hts.	12
Columbus	29
Cuyahoga Falls	4
Dayton	27
Delaware	1
Dover	1
East Cleveland	5
East Palestine	1
Elyria	2
Empire	1
Euclid	4
Fairborn	3
Fairview Park	1
Findley	2
Fremont	1
Garfield Hts.	1
Greenville	1
Hamilton	3
Harrod	1
Huron	1
Independence	1
Jefferson	1
Kent	1
Kingston	1
Lakewood	10
Lancaster	3
Lima	1
Lorain	3
Magnetic Spgs.	2
Manafield	1
Maple Hts.	3
Marion	1
Marysville	1
Massillon	2
Masury	1
Maumee	2
Medina	1
Middletown	2
Montpelier	1
Mt. Vernon	1
Negley	1
New Philadelphia	1
Northfield	1
Norwood	1
Novelty	1
Oxford	1
Painesville	2
Parma	3
Parma Hts.	1
Poland	1
Redlands	1
Rocky River	4
Salem	2
Sandusky	1
Shaker Hts.	6
Solon	1
South Euclid	2
Springfield	6
Spring Valley	1
Steubenville	1
Sugarcreek	1
Terrace Park	1
Toledo	13
University Hts.	1
Upper Arlington	1
Urbana	1
Wadsworth	2
Warren	2
Waverly	1
Westerville	1
Weston	1
Wickliffe	1
Worthington	4
Wright-Patterson AFB	3
Youngstown	6
Zanesville	2
	362

Oklahoma

Ada	1
Ardmore	1
Bartlesville	4
Bethany	1
Davis	1
Elk City	1
Enid	4
Ft. Sill	2
Hugo	1
Lawton	2
Locust Grove	1
Mountain View	1
Muskogee	2
Norman	2
Okarche	1
Oklahoma City	11
Okmulgee	3
Ponca City	2
Tahlequah	1
Tulsa	12
Welch	1
	55

Oregon

Aloha	1
Astoria	1
Beaverton	3
Bend	1
Boring	1
Camp White	1
Corvallis	4
Cottage Grove	1
Dallas	1
Eugene	12
Medford	3
Nehalem	1
North Bend	1
Oswego	1
Portland	43
Roseburg	2
Salem	7
Sutherlin	1
Tigard	1
Veneta	1
	87

Pennsylvania

Abington	1
Aliquippa	1
Allentown	4
Allison Park	2
Altoona	2
Ambridge	3
Appollo	1
Ardmore	1
Arnold	1
Ashley	1
Aspinwall	1
Athens	1
Baden	2
Bala Cynwyd	1
Beaver	4
Beaver Falls	2
Bellwood	1
Berwick	2
Berwyn	3
Bethlehem	4
Blairsville	2
Bloomsburg	1
Blue Bell	1
Bridgeport	3
Bridgeville	2
Bristol	1
Broomall	2
Brownsville	1
Butler	3
Camp Hill	4
Canonsburg	1
Carlisle	2
Carnegie	1
Center Valley	1
Chadds Ford	1
Chalfont	1
Chambersburg	1
Charleroi	1
Chester	3
Clairton	1
Claysburg	1
Clifton Hts.	1
Contesville	3
Collegeville	1
Collingdale	1
Columbia	1
Connenutville	1
Connellsville	1
Cornopolis	1
Crabtree	1
Crafton	1
Derry	1
Dickson City	2
Donora	1
Downington	1
Doylestown	2
Drexel Hill	2
Dunmore	1
Easton	2
East Stroudsburg	1

Ebensburg	1
Elizabethtown	2
Elkins Park	1
Erie	9
Evans City	1
Everett	1
Fairless Hills	1
Finleyville	1
Folcroft	1
Forty Fort	1
Franklin	1
Gettysburg	1
Gibsonia	1
Glenolden	1
Glenshaw	1
Greensburg	2
Hadley	1
Harrisburg	2
Hatboro	1
Haverford	1
Havertown	4
Hazleton	6
Hershey	1
Holland	1
Honesdale	1
Howard	1
Hummelstown	1
Hunkers	1
Indiana	2
Ingomar	1
Jeannette	1
Jenkintown	1
Jessup	1
Joffre	1
Johnstown	10
Kane	2
Kennett Sq.	1
Kintnersville	1
Lafayette Hill	1
Lancaster	6
Lansdale	2
Lansdowne	4
Lansford	1
Lebanon	2
Leesport	1
Leetsdale	3
Lehighton	1
Levittown	3
Library	1
Ligonier	1
Lumberville	1
Mahanoy City	2
Marwood	1
McKeesport	1
Meadville	1
Mechanicsburg	1
Media	5
Mercer	1
Middletown	1
Montoursville	1
Morrisville	1
Mt. Carmel	2
Muncy	2
Nanticoke	1
Narberth	1
Nesquehoning	1
New Castle	1
New Kensington	1
New Philadelphia	1
Newtown Sq.	1
Nicholson	1
Norristown	3
Oakmont	1
Oil City	2
Oxford	1
Palmerton	1
Paupack	1
Philadelphia	65
Phoenixville	7
Pitcairn	1
Pittsburgh	70
Plymouth Mtg.	2
Punxsutawney	1
Radnor	1
Reading	12
Ridley Park	2
Rochester Mills	1
Rosemont	1
Sayre	1
Schwenkville	1
Scranton	1
Secane	1
Selinsgrove	1
Sewickley	8
Sinking Spring	1
Souderton	1
South Temple	1
State College	2
Stroudsburg	1
Sugar Notch	1
Sunbury	2
Tarentum	1
Temple	1
Titusville	1
Tremont	1
Union City	1
Uniontown	1
Upper Darby	4
Verona	1
Washington	2
Waynesboro	1
West Chester	1
West Grove	1
West Lawn	3
West Newton	1
West Pittston	1
Wexford	2
Wilkes-Barre	5
Wilkinsburg	1
Williamsburg	1
Williamsport	3
Wynnewood	2
Wyoming	1
Yardley	1
York	7
	457

Rhode Island

Barrington	4
Bristol	1
Cranston	1
East Greenwich	1
Edgewood	1
Jamestown	1
Kingston	1
Newport	1
North Providence	1
Pawtucket	2
Providence	12
Saylesville	2
	28

South Carolina

Aiken	1
Beaufort	1
Charleston	2
Chester	1
Columbia	8
Darlington	1
Ft. Jackson	1
Greenville	5
Greenwood	2
Iva	1
North Augusta	1
North Charleston	1
Richburg	1
St. George	1
Spartanburg	2
Sumter	2
Williston	1
Winnsboro	1
	34

South Dakota

Aberdeen	1
Ft. Meade	1
Huron	2
Lead	1
Mission Hill	1
Mitchell	2
Presho	1
Rapid City	2
Sioux Falls	6
Sturgis	1
Vermillion	1
Watertown	1
	20

Tennessee

Cedar Hill	1
Chattanooga	6
Clarksville	1
Collegedale	1
Concord	1
Copperhill	1
Fountain City	1
Johnson City	4
Jonesboro	1
Kingsport	5
Knoxville	8
Lawrenceburg	1
Lebanon	1
Madison College	2
Memphis	21
Millington	1
Morristown	1
Nashville	21
Oak Ridge	1
Savannah	1
	80

Texas

Abilene	4
Alice	1
Amarillo AFB	5
Arlington	2
Austin	10
Baytown	1
Beaumont	7
Bellaire	4
Big Spring	2
Blanket	1
Commerce	1
Corpus Christi	16
Crane	1
Dallas	57
Decatur	1
Ellington AFB	1
El Paso	12
Ft. Hood	3
Ft. Sam Houston	10
Ft. Worth	23
Galena Park	1
Galveston	14
Garland	1
Georgetown	1
Gladewater	1
Gonzales	11
Harlingen	3
Houston	43
Huntsville	1
Hurst	1
Irving	1
Jacksonville	2
James Connally AFB	1
Jean	1

Karnes City	1
Killeen	1
Lackland AFB	1
La Marque	2
Lewisville	1
Longview	2
Lubbock	6
McAllen	1
Midland	5
Mission	1
Muleshoe	1
Odessa	2
Paris	1
Pharr	1
Port Arthur	1
Randolph Field	1
Richardson	1
Rockwall	1
San Angelo	3
San Antonio	25
San Marcos	1
Sherman	1
Sweeny	1
Temple	6
Texarkana	2
Texas City	2
Troy	1
Tyler	4
Velasco	1
Victoria	1
Waco	4
Wichita Falls	9
Yorktown	1
	336

Utah

Bountiful	1
Dugway	1
Kaysville	1
Kearns	1
Lehi	1
Logan	2
Moab	1
Ogden	4
Provo	3
Salt Lake City	26
	41

Vermont

Barre	1
Brattleboro	2
Brookfield	1
Burlington	5
Chester Depot	1
Manchester	1
Northfield	1
Rutland	5
South Burlington	1
Springfield	1
White River Junction	2
	21

Virginia

Alexandria	12
Appomattox	1
Arlington	21
Ashland	1
Bayside	1
Blacksburg	3
Bridgewater	1
Charlottesville	5
Culpeper	1
Danville	1
Ellerson	1
Falls Church	6
Fishersville	4
Ft. Belvoir	1
Ft. Eustis	1
Hampton	7
Hanover	1
Harrisonburg	2
Highland Spgs.	1
Hopewell	2
Kecoughtan	1
Lincoln	1
London Bridge	1
Lynchburg	2
Martinsville	1
McLean	1
Monterey	1
New Market	1
Newport News	1
Norfolk	6
Odd	1
Petersburg	1
Poquoson	1
Portsmouth	4
Pulaski	1
Quantico	1
Radford	1
Richmond	41
Roanoke	7
Salem	2
Smithfield	1
Staunton	1
Stephens City	1
Vienna	2
Waverly	1
Williamsburg	1
Winchester	2
Wytheville	1
	159

Washington

Aberdeen	2
Bellevue	4
Bellingham	5
Benge	1
Bow	1
Bremerton	4
Centralia	1
Clarkston	1
Cle Elum	1
College Place	2
Dryden	1
Edmonds	2
Everett	3
Ft. Lewis	2
Ft. Steilacoom	1
Kennewick	1
Kent	1
Kirkland	1
Longview	2
Marysville	1
Mt. Vernon	2
North Bend	2
Opportunity	1
Pasco	1
Poulsbo	1
Pullman	3
Puyallup	2
Redmond	1
Renton	3
Richland	2
Seattle	61
Spokane	15
Sunnyside	1
Tacoma	22
Toppenish	1
Vancouver	5
Walla Walla	5
Wenatchee	3
Winslow	1
Yakima	6
	175

West Virginia

Barrackville	1
Beckley	3
Bridgeport	1
Charleston	5
Chester	1
Clarksburg	2
Fairmont	1
Gary	1
Huntington	7
Lewisburg	1
Man	1
Marmet	1
Martinsburg	3
Milton	1
Moorefield	1
Morgantown	6
Mullins	1
Parkersburg	1
Sabraton	1
Weirton	2
Wellsburg	1
Wheeling	2
	44

Wisconsin

Antigo	1
Appleton	4
Barron	1
Beaver Dam	1
Beloit	2
Big Bend	1
Brookfield	2
Burlington	3
Cheteki	1
Chippewa Falls	1
Cudahy	2
Darlington	1
Delafield	1
Delavan	1
Eau Claire	5
Elkhorn	1
Ellsworth	1
Elm Grove	1
Evansville	1
Fond du Lac	3
Genoa City	1
Green Bay	6
Greendale	1
Kaukauna	1
Kenosha	8
Kohler	1
La Crosse	3
Lake Mills	1
Livingston	1
Madison	41
Manitowoc	2
Marshfield	1
Milton	1
Milwaukee	64
Monroe	4
Mosinee	1
Mt. Horeb	1
Neenah	4
New Holstein	2
Oconomowoc	1

Oconto	1
Oshkosh	2
Racine	8
St. Croix Falls	1
Shawano	1
Sheboygan	4
Shorewood	2
Superior	2
Tomah	1
Waterford	1
Waterloo	1
Waukesha	1
Waupun	1
Wausau	6
Wauwatosa	9
West Allis	3
Whitefish Bay	1
Whitewater	1
Wisconsin Rapids	1
Wood	2
	228

Wyoming

Afton	1
Buffalo	1
Casper	4
Cheyenne	9
Kemmerer	1
Lander	1
Laramie	3
Sheridan	2
Francis E. Warren AFB	2
	24

Alaska

Anchorage	9
Cordova	1
Fairbanks	1
Juneau	2
Mt. Edgecumbe	1
Portage	1
Seward	1
Sitka	1
	17

Canada

Asbestos	1
Belleville	1
Chippawa	1
Emo	1
Lantzville	1
Montreal	2
Regina	1
Ridgeway	1
Ste. Foy	1
Shawinagan Falls	1
Sussex	1
Toronto	1
Vancouver	3
Windsor	1
	17

Canal Zone

Ancon	1
Balboa	1
	2

Foreign

Amstelveen, Netherlands	1
Beir-Zett, Trans-Jordan	1
Bogota, Colombia, S. A.	1
Bombay, India	2
Caracas, Venezuela, S. A.	2
Cardenas, Cuba	1
Concepcion, Chile, S. A.	1
Dhahran, Saudi, Arabia	1
Grythyttan, Sweden	1
Guadalajara, Mexico	1
Guildford, England	1
Heidelberg, Germany	1
Maracaibo, Venezuela, S. A.	1
Mexico, D. F., Mexico	4
Miraflores, Lima, Peru, S. A.	2
Moss, Norway	1
Necochea, Argentina, S. A.	1
Norfolk Island, South Pacific	1
Reykjavik, Iceland	1
Rio de Janeiro, Brazil, S. A.	1
St. Thomas, Virgin Islands	1
Santiago, Chile, S. A.	1
Sao Paulo, Brazil, S. A.	2
Seoul, Korea	1
Taegu, Korea	1
Tanganyika, Brit. E. Africa	1
Tel Hashomer, Israel	1
Thessoloniki, Greece	1
Trinidad, B. W. I.	1
	36

Hawaii

Aiea Hts.	1
Hawawa Hts.	2
Hilo	2
Honolulu	14
Lanikai	1
Lihue	1
Pearl City	1
Wahiawa	2
Wailuku	1
Waipahu	1
	26

Puerto Rico

Bayamon	1
Caguas	1
Cayey	2
Fajardo	1
Hato Rey	5
Isabela	1
Mayaguez	1
Ponce	2
Puerto Nuevo	1
Rio Piedras	5
San Juan	2
Santurce	4
	26

Address unknown 107

Total number of therapists 7663

Tabulation begun March 1; completed May 1, 1957.

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THE ARCHIVES

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For issues desired and prices, write to

AMERICAN CONGRESS OF PHYSICAL MEDICINE AND REHABILITATION

30 NORTH MICHIGAN AVENUE, CHICAGO 2, ILLINOIS

IMPORTANT NOTICE TO CONGRESS MEMBERS

Please take notice that at the last annual business meetings of the American Congress of Physical Medicine and Rehabilitation, September 11 and September 13, 1956, The Ambassador, Atlantic City, N. J., the following amendments to the Constitution were presented in writing. These amendments will be presented to the general membership for acceptance or rejection at the annual meeting, Hotel Statler, Los Angeles, September 8-13, 1957.

ARTICLE III — MEMBERSHIP

Section 1 — Classes of Members — This organization consists of:

(a) Active members

(b) Associate members

(c) Honorary members

Amend Article III, Section 1, to read as follows:

This organization consists of

(a) Active members

(b) Associate members

(c) Honorary members

(d) Affiliate members

Section 2 — Qualifications — The qualifications stated below with respect to each class of membership noted are prerequisites for eligibility for the class stated:

(a) To be an Active Member a person must be:

(1) A graduate in medicine and surgery, legally qualified to practice medicine and surgery in some state or territory, or in the District of Columbia or in some foreign country and, unless a foreign resident, be either (a) a member in good standing in a local medical society which is a component society of the American Medical Association or (b) be a medical officer in one of the Federal Services.

(2) Elected to such membership in accordance with the applicable provisions of the By-Laws.

(b) To be an Associate Member, a person shall be a physiologist, physicist, biophysicist, electrical engineer, mechanical engineer, chemical engineer, research worker, investigator, teacher or any other expert in the field of physical medicine and rehabilitation and shall be invited by the Membership Committee.

(c) To be an Honorary Member a person shall be an eminent person interested in physical medicine and rehabilitation and shall be invited by the Membership Committee, or shall be a holder of the Gold Key.

Amend Article III, Section 2, to read as follows:

(a) To be an Active Member a person must be:

(1) A graduate in medicine and surgery, legally qualified to practice medicine and surgery in some state or territory, or in the District of Columbia or in some foreign country.

(2) Elected to such membership in accordance with the applicable provisions of the By-Laws.

(b) To be an Associate Member, a person shall be a physiologist, physicist, biophysicist, electrical engineer, mechanical engineer, chemical engineer, research worker, investigator, teacher or any other expert in the field of physical medicine and rehabilitation and shall be invited by the Membership Committee.

(c) To be an Honorary Member a person shall be an eminent person interested in physical medicine and rehabilitation and shall be invited by the Membership Committee, or shall be a holder of the Gold Key.

(d) To be an Affiliate Member, a person shall be actively enrolled in an approved residency or fellowship in Physical Medicine and Rehabilitation.

These amendments were submitted in accordance with Article XVI — Amendments of the Constitution which reads as follows:

"This Constitution may be amended in whole or in part at any annual business meeting by a two-thirds vote of all voting members present and voting provided that prior to that time the amendment —

(1) Has been presented in writing at the previous annual business meeting, and

(2) A copy of the proposed amendment, together with a notice that the matter will be voted on is sent by mail to each member or is published in the ARCHIVES OF PHYSICAL MEDICINE AND REHABILITATION not less than one month in advance of the annual business meeting at which action is to be taken."

...ANNUAL REPORTS...

American Congress of Physical Medicine and Rehabilitation

American Academy of Physical Medicine and Rehabilitation

American Registry of Physical Therapists

Report of the Finance Committee

The report of our auditor which follows indicates that for the year ending December 31, 1956, the American Congress of Physical Medicine and Rehabilitation continued to operate on a sound financial basis.

Louis B. Newman
Herbert W. Park
Charles S. Wise
Frank H. Krusen, *Ex-officio*

AMERICAN CONGRESS OF PHYSICAL MEDICINE AND REHABILITATION

Report on Examination
For the Year Ended December 31, 1956

May 1, 1957

Board of Governors,
American Congress of Physical Medicine
and Rehabilitation,
30 North Michigan Avenue,
Chicago, Illinois

Dear Sirs:

I have examined the balance sheet of the American Congress of Physical Medicine and Rehabilitation as of December 31, 1956, and the related summary of net income and surplus for the year then ended. My examination was made in accordance with generally accepted auditing standards and accordingly included such tests of the accounting records and such other auditing procedures as I considered necessary in the circumstances, except as stated in the following paragraph.

I did not verify the income from subscriptions to ARCHIVES, a magazine published monthly by the Congress, because it was not considered practicable. However, I tested the correctness of the subscription income recorded on the books by reference to available supporting data.

Based on my examination, limited to exclude verification of ARCHIVES subscription income, in my opinion, the accompanying balance sheet and summary of net income and surplus present fairly the financial position of the American Congress of Physical Medicine and Rehabilitation at December 31, 1956, and the results of its operations for the year then ended in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

I submit the following exhibits:

Exhibit
A — Balance Sheet, December 31, 1956.
B — Summary of Net Income and Surplus for the Year Ended December 31, 1956.

Yours truly,
Joseph Kanovski
Certified Public Accountant

Exhibit A

American Congress of Physical Medicine
and Rehabilitation
(Incorporated in Illinois — Not for Profit)

Balance Sheet, December 31, 1956

Assets

Current Assets:		
Cash:		
Michigan Avenue National Bank of Chicago	$ 9,165.89	
Bell Savings and Loan Association	10,000.00	
Petty Cash	150.00	$19,315.89
Accounts receivable:		
Advertisers and exhibitors	$ 2,100.67	
Membership dues	280.00	
American Registry of Physical Therapists	5,386.23	
American Academy of Physical Medicine and Rehabilitation	1,320.53	9,087.43
Investments in United States Savings bonds—at cost		63,000.00
Accrued interest		546.28
Deposit at United States Post Office		50.00
Total		$91,999.60

Liabilities

Current Liabilities:	
Accounts payable	$ 3,657.47
Dr. John S. Coulter Memorial Fund	750.00
Subscriptions to ARCHIVES —unexpired portion	8,043.39
Dues collected in advance — year 1957	320.00
Total current liabilities	$12,770.86
Surplus, per Exhibit B	79,228.74
Total	$91,999.60

Exhibit B

American Congress of Physical Medicine and Rehabilitation
Summary of Net Income and Surplus
For the Year Ended December 31, 1956

Income:		
Membership dues		$11,520.00
ARCHIVES:		
Advertising — less discounts — net	$14,433.04	
Subscriptions	14,830.45	
Sale of cuts, etc.	3,538.17	32,801.66
Interest on United States Savings Bonds		1,828.52
Convention income:		
Exhibits	$10,250.00	
Special instruction course	260.00	
Total	$10,510.00	
Direct convention expenses	6,580.03	
Convention income — net		3,929.97
Miscellaneous		7.01
Total income		$50,087.16
Expenses:		
Office salaries and expenses:	$32,407.97	
Printing — ARCHIVES	19,595.95	
Cuts, half-tones, electros, etc.	5,175.72	
Pay roll taxes	705.55	
Professional fees	1,182.00	
International Federation of Physical Medicine	166.60	
Special meeting	100.00	
Sundry	946.60	
Total expenses	$60,180.39	
Less share of expenses billed to:		
American Academy of Physical Medicine and Rehabilitation	$ 250.00	
American Registry of Physical Therapists	14,400.00	
Total	$14,650.00	
Expenses — net		45,530.39
Net income for the year		$ 4,556.77
Surplus at beginning of the year	$74,671.97	
Surplus at end of the year		$79,228.74

The report of the auditor which follows indicates that for the year ending December 31, 1956, the American Academy of Physical Medicine and Rehabilitation continued to operate on a sound financial basis.

AMERICAN ACADEMY OF PHYSICAL MEDICINE AND REHABILITATION

Report on Examination
For the Year Ended December 31, 1956

May 1, 1957

Board of Governors,
American Academy of Physical Medicine
and Rehabilitation,
30 North Michigan Avenue,
Chicago, Illinois

Dear Sirs:

I have examined the balance sheet of the American Academy of Physical Medicine and Rehabilitation as of December 31, 1956, and the related statement of net income and surplus for the year then ended. My examination was made in accordance with generally accepted auditing standards and accordingly included such tests of the accounting records and such other auditing procedures as I considered necessary in the circumstances.

Minutes of the 1956 annual meeting although requested from the custodian were not forwarded for examination.

In my opinion, the accompanying balance sheet and statement of net income and surplus present fairly the financial position of the American Academy of Physical Medicine and Rehabilitation at December 31, 1956, and the results of its operations for the year then ended in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

I submit the following exhibits:

Exhibit
A — Balance Sheet, December 31, 1956.
B — Statement of Net Income and Surplus for the Year Ended December 31, 1956.

Yours truly,
Joseph Kanovski
Certified Public Accountant

Exhibit A

American Academy of Physical Medicine
and Rehabilitation
(Incorporated in Illinois — Not for Profit)

Balance Sheet, December 31, 1956

Assets

Current Assets:	
Cash:	
Michigan Avenue National Bank of Chicago	$ 2,691.02
Beil Savings and Loan Association	2,300.00
Investment in United States Savings bonds — at cost	1,500.00
Accounts receivable —	
Members	60.00
American Registry of Physical Therapists	30.15
Accrued interest receivable	12.65
Total	$ 6,593.82

Liabilities

Current Liabilities:	
Accounts payable:	
Trade	$ 221.30
American Congress of Physical Medicine and Rehabilitation	1,320.53
Dues collected in advance	110.00
Total current liabilities	$1,651.83
Surplus, per Exhibit B	4,941.99
Total	$ 6,593.82

Exhibit B

American Academy of Physical Medicine and Rehabilitation

Statement of Net Income and Surplus
For the Year Ended December 31, 1956

Income:		
Members' dues		$ 1,980.00
Initiation fees		850.00
Miscellaneous		99.43
Total Income		$ 2,929.43
Expenses:		
Share of office expenses billed by American Congress of Physical Medicine and Rehabilitation	$ 250.00	
Professional fees	583.73	
Office supplies	366.47	
Richard Kovács Memorial Fund	700.00	
Miscellaneous	338.99	
Total expense		2,239.19
Net income for the year		$ 690.24
Surplus at the beginning of the year	$ 4,251.75	
Surplus at end of the year		$ 4,941.99

AMERICAN REGISTRY OF PHYSICAL THERAPISTS

Annual Report

January 1 — December 31, 1956

The major activities of the Registry follow the purposes for which it was organized; namely, to advance the art and science of medicine by promotion of the understanding and utilization of physical therapy, in the prevention and treatment of human ailments, and in the maintenance of or restoration to health; to aid in developing and maintaining educational and ethical standards in physical therapy for the benefit of the public generally and for the guidance of registrants of the American Registry of Physical Therapists; to develop and conduct examinations for physical therapists to determine their competency and qualifications to adequately administer physical therapy under the prescription, direction, and supervision of licensed physicians, and to maintain a registry and make available a list of such registrants. A widespread utilization of the list of registrants is advocated to the end that the facilities and methods employed in physical therapy may effectively augment the services of American medicine. All of its activities represent an effort on the part of the Registry to carry out its original purposes.

Dr. Donald L. Rose was reappointed to serve on the Board for a period of seven years beginning January 1, 1957.

At the Interim Meeting, April 6 and 7, 1956, Hotel Commodore, New York City, the following motions were passed:

Appointment of a committee to discuss and prepare amendments to the Registry By-Laws for presentation at the next meeting of the Boards of the Registry. The main amendments to be considered for revision should cover revocation of registration and technic or manner by which it shall be carried out.

Approval of nominations of Miss Elizabeth Wood and Miss Margaret Moore for appointment to Advisory Committee to the AMA Council on Medical Education and Hospitals on new applications for approval of schools of physical therapy, with reevaluation of approved schools and further revisions in the essentials.

Next annual meeting of the Boards of the Registry is to be held at a time other than the annual meeting of the American Congress of Physical Medicine and Rehabilitation.

Authorization was granted to have 13th edition of Directory of American Registry of Physical Therapists published in ARCHIVES OF PHYSICAL MEDICINE AND REHABILITATION; the Directory is to be listed in two sections, alphabetic and geographic.

Removal of words "or junior physical therapist" contained in Section 8, Subdivision 1, of proposed guide for physical therapy law.

Acceptance of proposed guide for physical therapy law with immediate circulation of this proposed guide, first to those who have requested the material and then to all other states as a matter of information.

At the Annual Meeting, November 3 and 4, 1956, Hotel Statler, Cleveland, the following motions were passed:

Revision of the Registry By-Laws to include the following amendments:

a. Article II — 1st Object: To advance the art and science of medicine by promotion of the understanding and utilization of physical therapy, in the prevention and treatment of human ailments, and in the maintenance of, or restoration to, health.

b. Article II — 2nd Object: To aid in developing and maintaining educational and ethical standards in physical therapy etc.

c. Article II — 3rd Object: To develop and conduct examinations for physical therapists to determine their competency and qualifications to adequately administer physical therapy under the prescription, direction, and supervision of licensed physicians.

d. Article II — 4th Object: To maintain a registry and make available a list of such registrants.

e. Acceptance of Article III.

f. Article IV, Section 1 — The sentence, "It being the intention that the present system of one physician being nominated and confirmed each year shall be continued." be replaced by the following sentence: "The present system of one physician being nominated and confirmed each year shall be continued.". Also, motion was made that the comma after the word "term" be removed and the word, "and", be deleted in the last sentence of this Section.

g. Article IV, Section 2 — Part 1 of this Section was accepted; part 2 was accepted as revised with the exception that the word, "established", rather than the word, "set", be used in the second sentence. Also, parts 3 through 11, inclusive, were accepted, excluding part 8. (Acceptance of part 8 pending review of Article VI.)

h. Acceptance of Article V, Sections 1 and 2, with the deletion of "from time to time" which appears in Section 2.

i. Acceptance of part 1 of Article VI, Section 1; part 2 of this Section accepted after corrected grammatically to agree with the other parts of this Section, that is, to have it start with a verb; and part 3 accepted with plural use of the word, examination. (Part 4 of this Section is to be included in another section of this Article.)

j. Alteration of Section 2 of Article VI (Rights) to include only parts 1, 2 and 3 in this Section which will read as follows: "1) A registrant member shall be issued a certificate by the Board designating such person as a 'physical therapist' and certifying that the registrant is a person: (a) qualified to administer physical therapy on the prescription and direction and under the supervision of a qualified physician; and (b) who has met the standards of the Board; 2) Such insignia as may be designated by the Board shall be made available to the registrant."; and set up another section, Section 3 (Duties) with part 4 of Section 1 and part 4 of Section 2 of this Article being points 1 and 2 under "Duties".

k. Approval of part 1 of Article VI, Section 3, which automatically became Section 4, with the addition of another point, letter (h) Nonpayment of dues. Also, part 2 of this Section was approved with the following corrections: in the second to the last sentence, the comma after "Registry" was removed and placed after "necessary" and the words, "the same" replaced with the words, "what action."

Adoption of amendments to Registry By-Laws.

Acceptance of part 8 of Article IV, Section 2.

Approval of eliminating unanimous Board vote and allowing chairman of the Board to act at his discretion in cases of emergency.

Legislation Committee to continue revision of letter drafted for use in investigating unethical therapists.

Acceptance of report of Legislation Committee.

Numerical scores of examination results of physical therapy students be sent to the schools.

Appointment of a committee by the Registry Board to determine (a) the advisability of providing a means for registration of foreign-trained therapists, with a recommendation that this committee discuss this problem with the AMA Council on Medical Education and Hospitals; (b) if it were thought wise, to set forth the means by which such foreign graduate students could be registered; and (c) this committee determine the wording of the necessary addition to our By-Laws to permit this change.

Appropriation of $2500 be made for renewal of legislation service.

Alteration of current Advisory Board to include a representative from the following specialties: pediatrics, neurosurgery and general practice, as well as those already represented.

Appointment of a committee to work out mechanics of changing the Advisory Board.

Acceptance of Miss Margaret Moore's resignation as member of Registry Board.

Election of Dr. Earl C. Elkins, Chairman of the Board; Dr. Robert L. Bennett, Vice-Chairman, and Dorothea C. Augustin, Registrar-Secretary-Treasurer.

A number of special problems were considered and several interim actions were completed by the Registry Board in 1956. Among these was the allocation of $2,000.00 for use within the period 1956-57 to promote the newly accepted guide law covering registration of physical therapists within individual States.

No registrations were cancelled during the year, 1956.

The following members were reinstated: Mrs. Margaret A. Healy, 1110 Stryker Ave., St. Paul, Minn.; Miss Blanche O. Seaman, 18 Kearny St., Newark, N. J.; Mrs. Anna J. Matthews, 12631 Pasio Olivos, Saratoga, Calif., and Mr. William H. V. Reilly, 97 Perry St., New York City.

The following members have been dropped from the roster of therapists in good standing for nonpayment of dues: Doris K. Allen, Joan B. Alston, Margaret F. Alt, Marie E. Angelotti, Margaret A. Ashley, Emily C. Bachl, Irene M. Baker, Marguerite S. Bakke, Mary Elizabeth Barnett, Helen K. Barron, Magnolia V. Bates, Joan Beadle, Jack C. Bean, Harold D. Bell, Martha S. Bell, Velma A. Beyer, Oliver Bogen, Molly M. Borchers, Alyce O. Bowman, Elizabeth Brinkman, Philena B. Brinkman, Mary D. Brown, Mary M. Buck, Ruth E. Bugge, Alice Butler, Betty M. Byrd, Jean E. Calhoon, Dorothy Cameron, Ruth M. Carlson, Verena M. Chase, Katharine V. Chilcote, Frank J. Connolly, Rose Marie Craft, Norvelle Curry, Albert Dankovich, Gloria D. Dent, Ann Di Leo, Joan A. Dix, Minnie J. Doerr, Maxine W. Donaldson, Marthann E. Doolittle, Mary Lou Dougan, Frederick C. Evans, Jr., Marta Everton, Margaret B. Fedoroff, Avis G. Feldman, Martin Feldman, Mary S. Filante, Helen L. Flake, Alfred S. Fondacaro, Janice M. Freitas, Elizabeth K. Gardner, Alice L. Garrett, Dorothy Garrison, Phyllis E. Gates, Mary D. Glassey, Thelma Goldstein, Jean M. Good, Clara Guyer, Elizabeth W. Hallaren, Mildred G. Hank, Suzanne W. Hansen, Marie T. Harcharufka, Nina Haugen, Cynthia Ann Herder, Edward L. Herman, Richard Herman, Elsie Hopkins, Jessica A. Hopkins, Ruth R. Innes, Jose Jimenez, Phyllis L. Jones, Thelma C. Jue, Joy W. Junkert, Patricia M. Kallen, Lois J. Kampmeier, Sidney J. Kent, Mary D. Kepros, James Killeen, Ruth S. Kindahl, Barbara B. Kurfess, Nancy P. Laack, Corrine W. Larson, Helen C. Larson, George W. Lawn, Julia K. Lichtenstein, William Llorente, Margaret H. Longley, Jack Low, Patricia R. McCarthy, Alta M. McDermott, Mary F. McDowell, Ardis J. McKillip, Miriam E. Miller, Shirley W. Moriarty, Barbara W. Meyers, Joseph J. Naimoli, Barbara Nash, Mary Lois Niquette, Anne G. Nolte, Anne M. Nottingham, Irene T. Neutzman, Lois T. O'Connell, Peggy O'Connell, Dorothy W. O'Hara, Jane D. Overly, Peter Papastratigakis, Priscilla B. Partridge, Clarence N. Patterson, Nancy S. Peterson, Virginia E. Picken, Millie Plyler, Evelyn G. Powers, Janet W. Prior, Vincent J. Privitera, Doreen M. Ralph, Nancy C. Ramos, William V. Reilly, Caroline S. Resch, Gilbert Rivers, Janet H. Robinson, Helen C. Rowan, Hilda T. Rubin, Lucia O. Ryan, Prudence H. Ryder, William Sainas, Ana T. Sanabria, Stanley M. Schleifer, Marion J. Schuder, Gertrude H. Schwarz, Jane B. Scott, Marjorie C. Scully, Walter S. Sekiya, Gracilla C. Serrano, Dorothy B. Sharpe, Maude Y. Shone, Marian E. Shoop, Archibald Simons, Roberta W. Simonson, Virginia C. Smith, Mary I. Stewart, Ann Stuart, Sister M. Angela Sullivan, Ragnhild Swanson, Blanche Talmud, Evelyn F. Thurston, Marion L. Townsend, Catherine K. Umbreit, Constantine Valentine, Rosario-Lutgarda Vega, Ana M. Viera, Amparo Villafane, Gladys E. Wadsworth, Ruth A. Wall, Mabel A. Warren, Ralph F. Washburn, De Lois J. Wilkinson, Kathleen Winters, Raymond J. Wojciak and Leslie G. Woodfin.

The following members have dropped their membership: Fae M. Adams, E. Grace Allen, Charlotte W. Anderson, Dorothy G. Anderson, Anne Q. Barnett, Kathryn S. Bier, Charles R. Chapman, Louise E. Christiansen, Fay B. Claeyssens, Margaret W. Cleaveland, Jean G. Cleveland, Cecilia A. Cummins, Mary Ann Day, Jean E. Disterdick, M. Louise Doten, Ellidee Dotson, Margaret Edwards, Mildred O. Elson, Lila E. Finlay, Pierre D. Fleissner, Katherine O. Frank, Margaret J. Galbraith, Florence M. Garrison, Brunetta K. Gillet, Elisabeth E. Gillette, Carmella A. Gonnella, Naomi S. Granger, M. Ruth Gustafson, Barbara G. Hallowell, Esther D. Halverson, Edith Hansen, Lois R. Hansen, Anna M. Heermann, Roberta E. Heidenreich, Fae M. Hilliard, Helen J. Hislop, Walter J. Jadeson, Joyce M. Jackels, Ella F. Johnson, Thomas G. Johnson, Gilda S. Kaasa, Robert Kaplan, Elizabeth J. Keefe, Vernon Kisaberth, Ruth L. Lakey, Mary M. Leach, Sally M. Lowe, Bernice H. Lowen, Nancy L. Mercer, Amy S. Mildram, Meryl Miles, Judith Miller, Eunice K. Morrow, Shirley M. Morse, F. Jeanette Munro, Fay K. Myers, Sister Marie Pascal, Elizabeth L. Patch, Lois K. Pelgrim, L. Joyce Picard, Hazel Putman, Barbara O. Robinson, Mary E. Rockhill, Sarah S. Rogers, John L. Ryan, Cleora Sankey, Bertha Schmidt, Hermina A. Schoenherr, Gertrude P. Spangler, Marion Stewart, Audrey D. Stoner, Helen R. Stringer, Donald G. Van Vooren, Irma J. Walker, Helen S. Weeks, Lois M. Wellband, Janet A. Wessel and Catherine Worthingham.

The following members are deceased: Elizabeth Q. Ammerman, Anna H. Boyle, Marguerite Collins, Muriel de Castro, Barbara V. Donaldson, Anna-Mae Gleeson, Frances M. Le Compte, Anita K. Lowenstein, Lucile H. Vosgerau, and Elin L. Wiswald.

Certificates Issued According to School of Graduation

Name of School	Number of Graduates Registered
Albany Hospital, Albany, N. Y.	5
Boston University, College of Physical Education for Women, Sargent College, Cambridge, Mass.	13
Bouve-Boston School of Physical Education, Medford, Mass.	15
University of Buffalo, Buffalo, N. Y.	10
University of California, School of Medicine, San Francisco	19
Charity Hospital of Louisiana, New Orleans	4
Children's Hospital, Los Angeles	13
Cleveland Clinic Hospital, Frank E. Bunts Educational Institute, Cleveland	12

College of Medical Evangelists, Los Angeles	11
University of Colorado, Denver	18
Columbia University, College of Physicians and Surgeons, New York City	14
University of Connecticut, Storrs	24
Duke University School of Medicine, Durham, N. C.	9
State University of Iowa College of Medicine, Iowa City	20
University of Kansas Medical Center, Kansas City, Kans.	17
Marquette University School of Medicine, Milwaukee	11
Mayo Clinic, Rochester, Minn.	32
Medical College of Virginia, Richmond	29
University of Michigan, Ann Arbor	15
University of Minnesota, Medical School, Minneapolis	14
New York University, School of Education, New York City	15
Northwestern University Medical School, Chicago	15
Ohio State University, Columbus, Ohio	3
University of Oklahoma, Oklahoma City	1
Division of Physical Therapy, School of Auxiliary Medical Services, University of Pennsylvania, Philadelphia	39
St. Louis University, St. Louis	9
Simmons College, Boston	8
University of Southern California, Los Angeles	13
Stanford University, Stanford, Calif.	12
University of Texas School of Medicine, Galveston	5
Washington University School of Medicine, St. Louis	14
D. T. Watson, School of Physical Therapy, Leetsdale, Pa.	35
University of Wisconsin Medical School, Madison	20
Medical Department — U. S. Army	
Brooke Army Medical Center, Ft. Sam Houston, Texas	6
Letterman Army Hospital, San Francisco	5
Walter Reed Army Hospital, Washington, D. C.	6
TOTAL	511
Number of registrations completed	511
Number of examinations conducted	589
Number of retake examinations conducted	31

The report of the auditor which follows indicates that for the year ending December 31, 1956, the American Registry of Physical Therapists continued to operate on a sound financial basis.

AMERICAN REGISTRY OF PHYSICAL THERAPISTS

Report on Examination

For the Year Ended December 31, 1956

May 1, 1957

Board of Registry,
American Registry of Physical Therapists,
30 North Michigan Avenue,
Chicago, Illinois

Dear Sirs:

I have examined the balance sheet of the American Registry of Physical Therapists as of December 31, 1956, and the related statements of net income and surplus for the year then ended. My examination was made in accordance with generally accepted auditing standards and accordingly included such tests of the accounting records and such other auditing procedures as I considered necessary in the circumstances.

In my opinion, the accompanying balance sheet and statement of net income and surplus present fairly the financial position of the American Registry of Physical Therapists at December 31, 1956, and the results of its operations for the year then ended in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

I submit the following exhibits:

Exhibit

A — Balance Sheet, December 31, 1956.

B — Statement of Net Income and Surplus for the Year Ended December 31, 1956.

Yours truly,

Joseph Kanovski
Certified Public Accountant

Exhibit A

American Registry of Physical Therapists
(Incorporated in Illinois — Not for Profit)

Balance Sheet, December 31, 1956

Assets

Current Assets:		
Cash:		
Michigan Avenue National Bank of Chicago	$19,383.15	
Bell Savings and Loan Association	2,500.00	$21,883.15
Accounts receivable — dues and registration	$ 795.00	
Less reserve for possible losses	650.00	145.00
United States Savings bonds — at cost		55,000.00
Accrued interest		436.22
Total		$77,464.37

Liabilities

Current Liabilities:		
Accounts payable:		
Trade	$ 1,724.28	
American Academy of Physical Medicine and Rehabilitation	30.15	
American Congress of Physical Medicine and Rehabilitation	5,386.23	$ 7,140.66
Accrued federal excise tax		5.40
Dues collected in advance — year 1957		17,586.00
Deposits with applications (subject to refund if applications are rejected)		2,700.00
Total current liabilities		$27,432.06
Surplus, per Exhibit B		50,032.31
Total		$77,464.37

Exhibit B

American Registry of Physical Therapists

Statement of Net Income and Surplus
for the Year Ended December 31, 1956

Income:		
Dues		$18,980.00
Registration fees		7,560.00
Sales:		
Pins	$ 531.05	
Emblems	340.00	
Directory	488.00	1,359.05
Interest		1,267.33
Miscellaneous		70.39
Total income		$29,236.77
Expenses:		
Share of office expense billed by American Congress of Physical Medicine and Rehabilitation	$14,400.00	
Examinations — supervision and grading	2,134.58	
Board meeting	1,521.53	
Purchase of pins	1,086.89	
Office supplies	1,535.69	
Special conferences	1,767.73	
Office equipment	1,062.05	
Fidelity bond premium	30.15	
Legislation Committee	808.68	
Professional fees	2,430.69	
Purchase of emblems	417.69	
Miscellaneous	125.05	
Total expenses		27,320.73
Net income for the year		$ 1,916.04
Surplus at beginning of the year		$48,116.27
Surplus at end of the year		$50,032.31

Respectfully submitted,

Dorothea C. Augustin

AMERICAN REGISTRY OF PHYSICAL THERAPISTS
Dorothea C. Augustin, Registrar

REMEMBER TO REGISTER EARLY FOR THE MEETING!

•

Official registration will be open on
SUNDAY, SEPTEMBER 8 from 1:00 to 5:00 P.M.
in the WILSHIRE ROOM LOUNGE

•

Tickets for the CONGRESS/ACADEMY Dinner will be available

book reviews

The reviews here published have been prepared by competent authorities and do not necessarily represent the opinions of the American Congress of Physical Medicine and Rehabilitation and/or the American Academy of Physical Medicine and Rehabilitation.

THE MANAGEMENT OF FRACTURES, DISLOCATIONS AND SPRAINS. By *John Albert Key*, M.D., and *H. Earle Conwell*, M.D. Sixth edition. Cloth. Price, $20.00. Pp. 1168, with 1,123 illustrations. The C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, 1956.

This edition brings up to date a book which was first published in 1934. It takes up every imaginal phase in the treatment of fractures and dislocations — how they should be managed from the time that they occur until treatment is complete. The various complications are described. These include injuries to muscles, infection, injuries of blood vessels, injury to the brain, to the viscera, to nerves, to neighboring joints. Acute bone atrophy is discussed, as is fat embolism and pulmonary complications. The illustrations are outstanding, both as methods of describing the fractures and as methods in describing treatment. These in themselves are of a great deal of value. Because of the material covered, one feels that less time is given to low back strains and such cervical strains as occur of the whiplash type than one would desire. In the same way, the multiple problems that exist in the shoulder are not covered as well as one could desire. But since this book is primarily for the purpose of describing care of acute conditions or conditions following fractures and dislocations, it is most satisfactory. It is written primarily for the student interested in traumatic surgery and for the general practitioner as well as for the surgeon. It is a book that should be in the library of anyone who deals with fractures and dislocations. The authors, of course, are outstanding in their field, and have described the most practical and satisfactory methods of handling the conditions in which they are interested.

DIE PHYSIK UND IHRE ANWENDUNG IN BIOLOGIE UND MEDIZIN. BAND II. ELECTRIK, OPTIK UND ATOMPHYSIK. By *Walter Beier* and *Erich Dorner*. Cloth. Price, 54.70 DM. Pp. 528, with illustrations. Georg Thieme, Leipzig, Germany, 1957.

The present volume of this work is a worthy companion book to the first volume which was published in 1956 and reviewed in this journal in July, 1956. Again the successful effort has been made to make physics palatable to the medical student by selecting methods and instruments used in clinical medicine to illustrate physical laws rather than from the customary engineering fields. A list of a few of these instruments may demonstrate the point: meter for paper electrophoresis; ionotome for iontophoresis; apparatus for electroshock; electro-dermatometer; x-ray apparatus for the production of "moving radiation"; x-ray picture amplifier; electrocardiograph with additional registration of phonodiagrams and pulscurves, microwave and ultrasound machines; blood pressure recording devices; fluorescence and electron microscopes; various kinds of "scopes"; cyclotron and atomic reactor, and many more. A relatively large part of the space is devoted to atomic physics and nuclear medicine. An appendix on mathematics in medicine, some special chapters on theoretical medicine and numerous useful tables conclude the book. The scope of the special chapters on theoretical medicine is illustrated by some of the chapter titles — introduction into the foundation of biological and medical statistics; the target-theory of biological radiation effects; derivation of the formula for the stroke-volume and the heart-minute-output on the basis of electromechanical considerations; the hexagonal analysis of an electrocardiogram according to Schlomka and Jungk; mathematical treatment of renal clearance according to Rau and Schumann; electrical calculators; equivalent values of the roentgen unit for 1 cubic-centimeter under normal conditions; the geometric factor g in the dosage formula for gamma rays according to Marinelli. Contents, illustrations and physical make-up of this book which was written and printed in Leipzig (East Germany) are well above the average. The only criticism, which was already voiced in the review of the first volume, refers to the scarcity of good references to the bibliography on the subject of medical physics. It is difficult to understand why there should be only 58 bibliographic references in a book of this caliber. All of these, with the exception of one or two, are to German publications. It is to be regretted that no mention is made of the vast literature on related subjects published outside of Germany and notably in the United States.

PHYSICAL METHODS OF PLASTIC SURGERY. Physical Medicine Series, Vol. III. By *Joseph P. Reidy*, F.R.C.S. Cloth. Price, $3.00. Pp. 69, with illustrations. Essential Books Inc., 16-00 Pollitt Dr., Fair Lawn, N. J., 1956.

The author makes the following statement in the preface: "The basic principles of Physical Methods have been applied to similar problems in other fields, but because of the peculiar features of tissue reconstruction, at least some knowledge of the technique and of the aims and objects of Plastic Surgery are essential to all members of the team if the best results are to be obtained. Therefore, some of the procedures which are undertaken, and some of the common difficulties which occur are presented in the following account. Although primarily intended for the guidance of Physiotherapist and other medical auxiliaries, it may be that the Medical Student will glean some useful sidelights and that those who have the general care and nursing of patients will find this monograph not without interest."

The book, a miniature characteristic of English medical writing, is divided into five major chapters respectively titled "Surface Wounds," "Surgical Procedures," "Function in Limb Conditions," "Function in Other Conditions," and "Physical Methods."

The reviewer has the uncomfortable task of failing to recommend a work which is actually rather well written but which fails in its primary purpose which is to supply the necessary background for ancillary personnel such as physical and occupational therapists in the treatment of patients with surgical integumentary difficulties. The volume is not sufficiently well written or comprehensive or modern to be of use to the medical student despite the hope voiced by the author in his preface, and a little too advanced, too detailed and too complete for the needs of the nurse and the various members of the rehabilitation team. The reviewer is of the opinion that the relationship between plastic surgery and subsequent physical medicine has not been a very striking or consistent one. There is no doubt we need to work on persons who are threatened with severe loss of muscle strength, endurance and joint range but these are looked upon as a part of the general problem of salvage of these functions rather than as a special case for plastic surgery. It is also perfectly true, that an axilla or a chin which is bound down by dense fibrous tissue beneath the skin cannot yield to measures of stretching and exercise no matter how faithfully carried out or how long, but must have further surgical relief before exercises can have their effect.

Although unable to recommend this book for individual purchase by physical and occupational therapists, it is a highly useful reference volume for the school bookshop or library, and occasionally for the large rehabilitation center.

PROGRESS IN NUCLEAR ENERGY. SERIES VII. Medical Sciences, Vol. I. Edited by *J. C. Bugher; J. Coursaget*, and *J. F. Loutit*. Cloth: Price, $6.00. Pp. 165. McGraw-Hill Book Company, Inc., 330 W. 42nd St., New York 36, 1956.

This volume is the first of a series planned to describe the application of nuclear energy in medical sciences. In eight such series the use of atomic energy in physics and mathematics, reactors, process chemistry, technology and engineering, metallurgy and fuels, biological sciences, economics and administration is to be presented. The present volume on the medical sciences has a definite international flavor and the material presented is based to a large extent on papers read at the Geneva Conference of Peaceful Uses of Atomic Energy (1955). The text is written by leaders in the field of atomic energy working at institutions in London, Los Angeles, Cambridge (England), Sutton, Chalk River and New York. Some of the chapters are symposia-like in structure and list additional scientists from the Soviet Union, India, France, Switzerland, the United States and other countries. The book has two thought-provoking "Forewords," one written by Robert S. Stone and the other by Sir Ernest Rock Carling. There are seven chapters which review the use of radioactive isotopes in medical diagnosis, therapy and research. The important chapters on "Principles and Standards of Radiation Safety" by W. Binks, Director of the Radiological Protection Service of the British Ministry of Health, and on "Dosimetry of Ionizing Radiations" by G. Failla, Director of the Radiological Research Laboratory of Columbia University, are especially recommended to the reader. All chapters contain a wealth of information and the list of some 300 references (a number of them from Soviet Union literature) are especially useful. There are also numerous tables and formulae to be found throughout the book but no illustrations. This is to be regretted for in quite a number of places the use of illustrations would enhance the value of the text. This book should be in every department using radioisotopes for clinical purposes.

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physical medicine abstracts

Experiences with Poliomyelitic Scoliosis After Fusion and Correction. T. Gucker, III. J. Bone & Joint Surg. **38-A**:1281 (Dec.) 1956.

That paralytic scoliosis does not behave as congenital or idiopathic scoliosis is emphasized. The curve in paralytic scoliosis may continue to increase for many years after the onset of the paralysis. Severe deformity may result which can lead to impairment of vital functions. The treatment of this type of deformity is twofold: to prevent progression of the deformity, and to attain adequate functional stability of the trunk.

The data for this paper was obtained from a review of 78 cases having undergone spinal fusion for scoliosis due to paralytic poliomyelitis at the Georgia Warm Springs Foundation. In the majority of cases the operation was done in several stages, one to three weeks apart.

In the initial followup, 76 per cent of the patients showed improvement and 24 per cent remained unchanged. However, at the end of the followup-period, 9 per cent of the curves was worse than before operation, 47 per cent was unchanged, and 44 per cent was improved. The best results were obtained in those with lumbar curves; 60 per cent was improved. The worst results were seen in thoracic and total C curves; 33 per cent was improved.

Factors related to the loss of correction are age of the patient at the time of fusion, duration of recumbency, length of time the jacket was worn, type of graft, and pseudoarthrosis. Four months of recumbent immobilization was considered sufficient. The rigid cellulose-acetate jacket should be worn for at least two years after upright position is permitted.

Pseudoarthrosis occurred in 56 per cent (44) of the 78 patients. The earliest this was noted after operation was six months. In one case it was not noted until 3⅓ years after surgery. Spontaneous healing resulted in 24 of the 44 patients in whom pseudoarthrosis occurred. Only 14 per cent of these patients had pain and only 18 per cent was reoperated. Forty-five per cent of the defects remained visible by x-ray for as long as 10 years. Conservative methods of treatment used were the avoidance of strenuous activity, lying flat in bed 12 hours a day, and wearing the jacket constantly. Surgical correction was advised if the defect were considerable and hypermobility was definitely present. It is believed that pseudoarthrosis is less likely to develop if iliac or thin tibial grafts are used. Patients with apparent pseudoarthrosis lost considerably more correction than did those without defects.

The patient's manner of walking and muscle involvement also contributed to loss of correction. These factors, however, were difficult to evaluate.

The data indicates that the performance of fusion in children as young as ten years of age need not have unfavorable results. Hence, if, despite adequate conservative care, the curve continues to progress, fusion should not be delayed until the patient is 14 to 16 years of age.

Diagnosis, Treatment and Prevention of Chronic Hypercortisonism in Patients with Rheumatoid Arthritis. C. H. Slocumb, et al. Ann. Int. Med. **46**:86 (Jan.) 1957.

Hypercortisonism is defined. They point out that this commonly-used term not only refers to an excess of cortisone but includes the direct and indirect effects of other related adrenal cortical hormones and to the effects resulting from endogenous stimulation of the adrenal cortex. This condition can be of a mild, moderate or severe degree of intensity, depending upon the different developments in each instance.

Acute hypercortisonism occurs in short-term treatment of acute illness or in the initial use of the drug in long-term illness. Familiar to all are the symptoms of excessive gain of weight, insomnia, euphoria or increased nervous tension, irregular menses, increase in fatty pads in supraclavicular and posterior cervical areas, and facial rounding. Problems of management depend upon the disease being treated, the duration of the intended treatment, etc.

Chronic hypercortisonism results from prolonged overdosage of cortisone and related compounds; may result from use of mild doses of the drug; and its onset is usually insidious in character. In the authors' experience, hypercortisonism does not manifest itself clinically in less than two months of treatment using a dosage of 75 to 100 mg. of cortisone or its equivalent daily. The characteristic features are labile, cyclical swings in mood, fatigability, muscular and joint aching and emotional instability, alternate with periods of stimulation associated with restlessness and relatively little aching. Differentiation of the musculoskeletal symptoms of hypercortisonism from those of a rheumatoid flare must be

made. In the former, synovitis may be minimal or not increased, the symptoms of aching and soreness are usually more muscular than articular, and there is often cutaneous and subcutaneous hypersensitivity and hyperalgesia. Physical therapy and salicylates, of benefit in the rheumatoid flare, do not adequately relieve the symptoms of chronic hormonal overdosage.

In the discussion of the treatment of hypercortisonism the authors include psychotherapy, adequate or extra rest, adjustment of dosage of hormones, use of salicylates and physical therapy (the latter to point of tolerance and not to that of inducing fatigue), and the use of adjunct measures such as diet, drug stimulants and tranquilizers. Noteworthy is the plea for the awareness of adrenocortical insufficiency states and need for prompt correction of this when the patient is on a program of steroid reduction. The authors also point out that the prevention of hypercortisonism is most important because its treatment at best is slow, difficult and perhaps inadequate. A convenient table is given summarizing the currently estimated dosage in long-term treatment of rheumatoid arthritis for all individuals, based on age and sex of the patient.

The Effect of Generalized Vasodilatation upon the Sympathectomized Extremity. T. O. Murphy; John J. Haglin, and D. A. Felder. Surgery 41:178 (Feb.) 1957.

Murphy and co-workers report their observations on the effect of generalized vasodilatation, mainly on digital pulse volume, before and after lumbar sympathectomy as recorded in a controlled temperature room at 20 C. and 35 C. in the supine position in patients whose sympathectomies were done from two months to two years after operation except for two cases which were five years after operation. Their ages ranged from 44 to 70 years. They noted that whole-body heating significantly increased the digital pulse volume even in the arteriosclerotic but not as much as accomplished by sympathectomy in those extremities checked pre- and post-operatively. However, they then noted that generalized vasodilatation induced by either whole-body heating or Priscoline decreased digital pulse volume in the sympathectomized extremity. They explain the latter phenomenon on the basis that the sympathectomized limb, with its relatively fixed blood volume and peripheral resistance, is affected by changes of blood volume and resistance elsewhere, resulting in a redistribution of flow to the detriment of the sympathectomized extremity according to the "borrowing-lending" hemodynamic phenomenon (hemometakinesia) described by DeBakey. They then point out that Winsor has shown a reasonably high correlation between pulse volume and blood flow in the unsympathectomized normal and arteriosclerotic extremity. Although the authors do not compare their results on the sympathectomized extremities in different age groups, they noted a drop in pulse volume with whole-body heating in a group of unsympathectomized arteriosclerotic extremities in patients above the age of 70, and they also feel these patients have an increased peripheral resistance with a decreased neuro-vasomotor activity and that the shifting of blood may be detrimental to a high number (43 per cent) of such extremities even though unsympathectomized.

They conclude that their studies have shown a consistent decrease in plethysmographic pulse volume in the sympathectomized limb after chemically and thermally induced generalized vasodilatation, indicating that such a reaction may be detrimental to the ischemic sympathectomized extremity.

The Early Rehabilitation of the Arteriosclerotic Amputee. R. Warren. Surgery 41:190 (Feb.) 1957.

The author presents a rapid rehabilitation program for arteriosclerotic above knee amputees in which he stresses "care and protection of the remaining foot, strengthening of the muscles necessary for walking, avoidance of flexion contracture of the hip on the amputated side, and early provision of a temporary prosthesis." The latter has an adjustable leather thigh socket which encloses the whole stump and contains an ischial seat. There is a manually operated ring lock knee joint with an artificial foot and ball-bearing ankle joint. The limb is held in place by a pelvic band which is connected to the thigh corset by a double-swivel hip joint. The author feels that the surgeon performing the operation should be in charge of the patient's rehabilitation which he feels requires the supervision of the ward personnel trained by the surgeon "rather than of a consultant or a consulting department." He bases this opinion on the premise that such services have been accustomed to dealing with patients receiving amputations for "traumatic, congenital or neoplastic lesions" and that these patients can "be rehabilitated at a more leisurely pace than the arteriosclerotic." He initiates walking by first teaching the patient to stand and bear weight on the prosthesis without attempting parallel bar or crutch balancing on the remaining leg before receiving the prosthesis. He divides contraindications to the use of a limb into those which also preclude crutch walking and those which will allow it. He also discusses below knee and bilateral amputees, the latter usually being supplied with short pylons, leather thigh corsets, and ischial weight bearing.

Under the author's program over a six year period at the West Roxbury and Boston VA Hospitals, 23 or 71 per cent of a group of 32 patients surviving amputation walked with a prosthesis. In 18 selected patients the mean interval between amputation and walking with a prosthesis was 4.3 weeks, 4 patients walking

with a prosthesis in less than 2.5 weeks postoperatively. Although he feels the permanent limb can be provided when maximum stump shrinkage has occurred, usually between 3 and 6 months, some of the patients feel that the "temporary" prosthesis satisfies their limited needs indefinitely and may not wish a permanent one.

Total Pulmonary Venous Drainage into the Right Side of the Heart. Ralph C. Darling; William B. Rothney, and J. M. Craig. Lab. Invest. **6**:44 (Jan.-Feb.) 1957.

The authors review the major clinical, developmental and anatomic findings of anomalous pulmonary venous return. On the basis of 17 necropsy cases at Boston Children's Hospital and 63 other reported cases, they describe four types of total pulmonary venous drainage into the right side of the heart. The first, divided into two subgroups, is that of drainage via the superior vena caval system, with and without persistent remnant of the left superior vena cava. In the second type drainage occurs directly into the coronary sinus or right atrium. The third type, in which the pulmonary blood flow entered the right side return pathway below the diaphragm, was associated with less right sided cardiac enlargement both on clinical and on postmortem evaluation. Nonetheless, all children showing this anomaly in the present review died earlier than three months of age. Combination of return via more than one of the above pathways is reported in a single individual. The compensating right-to-left shunt occurred at the atrial level in all cases, most being via a patent foramen ovale.

Clinical Application of Ultrasonics on Osteoarthritis and Bursitis. A. A. Martucci. Pennsylvania M. J. **59**:1364 (Nov.) 1956.

Observations on 179 clinical cases of osteoarthritis and bursitis treated by use of ultrasound are presented. There were no control studies because the study was on patients from three different hospitals. Ultrasound was prescribed when the cases fell into two clinical groups, i.e., osteoarthritis and bursitis. Some cases had previous treatment by x-ray and follow-up diagnostic films. No x-ray changes were noted in these.

Technic of application was use of either 1.5 watts per square cm. for 5 minutes or 3 watts per square cm. for 3 minutes. Mineral oil was the coupling agent and continual slow movement of the transducer head without interruption was the technic employed. In addition, radicular treatment of the paravertebral area of the corresponding nerve segments was done in each case.

The terms osteoarthritis and bursitis were ill-defined. However, the author gave detailed statistics on the number of patients in each hospital, the number of each type of case treated, and the average number of treatments per case. He mentions an occasional "amazing result" with one treatment for both osteoarthritis and bursitis (pain-free, increased range of motion in joint). He states that one patient with osteoarthritis was treated 61 times at daily intervals with the three-minute sounding. No undesirable side effects were noted. Patients with long histories responded more slowly than those with histories of short duration.

The author concludes that there is sufficient evidence to justify the use of ultrasound for therapeutic purposes in osteoarthritis and bursitis. He states that ultrasound is questionable treatment in patients who are not improved after 20 treatments. He questions the dosage but states that in his series ultrasonics has proved singularly successful in relieving pain, limited motion and swelling. Follow-up results on 56 of the treated patients showed 54 per cent of the arthritics and 50 per cent of those with bursitis were relieved for a period of one to two years.

Cineplasty — An End-Result Study. E. A. Brav, et al. J. Bone & Joint Surg. **39-A**:59 (Jan.) 1957.

A review of 107 cases of cineplasty done during the years 1948 to 1953 at Walter Reed Army Medical Center is presented. Seventy-eight cases were bicep and 29 were pectoral cineplasties. A successful end result was considered to be those in which the patients continued to wear their prosthesis for a year or more. The biceps cineplasty was successful in 73.1 per cent. The pectoral cineplasty proved satisfactory in 31.0 per cent. The authors found that the results in the three-year period from 1951 through 1953 were far superior to the results in the previous three-year period of 1948 through 1950. They attribute this to improved surgical technic and better selection of patients.

The authors state that cineplasty should be performed only at established amputation centers. A clinical team made up of surgeons familiar with the procedures, trained physiatrists, and prosthetists experienced in the problems of cineplasty should evaluate each patient. If after an evaluation the team believes that a cineplasty is indicated, the final decision should be made by the patient. The functional requirements of the patient and his motivation should be considered. The advantages and disadvantages of the procedure should be discussed with the patient. The kinesthetic advantages of graded prehension are fairly significant in amputation below the elbow. Statistics based on the response to a questionnaire sent to amputees having had cineplasties were given.

Pectoral cineplasty has proved to be generally less satisfactory than a cineplasty of the bicep. It is indicated in bilateral shoulder

disarticulation cases in which any source of control is desirable. The authors state that cineplasty is not advisable in children with upper extremity amputation and that it is not usually cosmetically acceptable to women. The authors include a discussion of the routine procedure for cineplasty candidates as followed at Walter Reed Army Medical Center.

Restoration of Quadriceps Function in Neglected Tear of the Patellar Tendon. H. Kelikian, et al. Surg. Gynec. & Obst. **104**:200 (Feb.) 1957.

It is mentioned that the patellar tendon has variously been called a ligament or tendon. If it is conceded that the patella is a sesamoid bone within the common tendon of the quadriceps group of muscles, the so-called ligamentum patellae should rightly be regarded as a continuation of that tendon and named accordingly.

The patellar tendon may tear loose from its proximal or distal attachments and may even rip through its own substance. In the authors' experience, it is most commonly avulsed from the inferior pole of the patella.

The authors point out that in old neglected tears of the patellar tendon, the quadriceps muscles undergo atrophy and disuse; the patella is pulled up on the femur and later becomes transfixed to the bone by firm, fibrous bands; the unused articular surface becomes roughened; the suprapatellar pouch of the knee is filled with adhesions and obliterated; the distal end of the torn tendon seals with scar and its main body shrivels and threads; and occasionally calcific deposits due to old hemorrhage may be seen in the tendon. Some of these changes are reversible, such as atrophy of the quadriceps and retraction of the patella. Other changes cannot be remedied.

Prior to attempts at repair the attached muscles should be mobilized and the quadriceps strengthened. At the primary surgery, the patella should be freed from its attachments to the femur and a Kirschner wire passed through the patella proximally from side to side. Postoperatively this wire is hooked to a weight and pulley arrangement to overcome contracture. Quadriceps setting exercises are also practiced postoperatively. When the quadriceps have gained their lost power and the patella has descended to an inch from the superior articular surfaces of the tibia, repair of the torn tendon is undertaken. Since the torn and scarred patellar tendon cannot be relied upon to hold sutures under tension, tendon grafts are used. The authors prefer to use the tendon of the semitendinosus for this procedure. Their technic is described. The Kirschner wire is removed and the extremity is incorporated in a cast. The cast and pins are removed in six weeks and exercises are started.

A case presentation is given. Ten pounds of traction on the intrapatellar Kirschner wire and 13 days of intensive quadriceps strengthening exercises were necessary before the second surgical setting was deemed advisable.

Evidence for Increased Effectiveness of Placebos with Increased Stress. H. K. Beecher. Am. J. Physiol. **187**:163 (Oct.) 1956.

Stated are the listed purposes of placebos to distinguish the effects of drugs alone from the effects of suggestion; to eliminate bias in appraisal of effects of drug (when used as "unknowns"); as a psychological tool in the therapy of certain ailments arising in mental illness, and to permit access to fundamental mechanisms of the action of the drug.

The purpose of this study was to determine whether in treating stressful situations, effectiveness of placebo varies with the intensity of stress. Placebos gave about 35 per cent satisfactory relief of the symptoms studied, including severe postoperative pain from wound, angina pectoris, headache, seasickness, anxiety, and the common cold. Satisfactory relief is defined as at least 50 per cent relief of pain at 45- and 90-minute intervals after administration of placebo or morphine.

The studies indicated that placebos are increasingly effective in increased stress. This greater effectiveness of placebos seems to be dependent upon the greater significance of or reaction to more severe stress than less severe. It is possible that not only placebos but therapeutically effective drugs may be proportionately more effective when there is increased stress. It is believed that this is a new concept.

The Electromyogram in the Diagnosis of Acute Infectious Polyneuritis. A. A. Marinacci, and C. W. Rand. Indust. Med. **25**:507 (Nov.) 1956.

Acute radiating pain, muscular weakness and paralysis due to the atypical form of acute polyneuritis may first appear during the working hours. The patient may believe he has sustained an industrial injury simulating back sprain and ruptured intervertebral disc. The electromyogram offers a more effective method than the clinical neurological signs in detecting the nature of acute infectious polyneuritis and so has been found to be useful in differentiating between industrial isolated lesions and atypical lesions due to infectious neuronitis which simulate industrial injuries. On electromyograph studies industrial injuries show isolated nerve lesions while acute infectious polyneuritis produces rather widespread changes. Five cases are presented with clinical pictures which could accompany either acute infectious polyneuritis or an in-

dustrial injury but in each case electromyograph studies showed more widespread motor nerve involvement than would be present with an industrial injury.

Circulation in the Hands in Hypertension. R. S. Duff. Brit. M. J. **4999**:974 (Oct. 27) 1956.

Determinations of peripheral circulation in various degrees of hypertension as well as in normotensive subjects were noted. Water-filled plethysmographs were applied to the hands and blood flow was noted according to the amount of water which was displaced during arterial inflow. This was expressed as ml. per minute per 100 ml. of hand volume.

The mean blood flow in the right hands of 36 normotensive patients ranged from 2.7 to 22.2 ml./100 ml./minute with a mean for the whole group of 10.5 ml./100 ml./minute.

Blood flow in the right hands of 25 hypertensive patients ranged from 2.7 - 22.2 ml./100 ml./minute. When, however, the hypertensive group was graded according to severity of involvement it was seen that those in the benign phase (diastolic pressure under 130 mm. Hg) tended to have higher blood flows than those in the malignant phase (diastolic pressure over 130 mm. Hg).

An even closer relationship was found between diastolic pressure and hand flow. Average flow with diastolic pressure under 130 mm. Hg was 14.2 ml.; flow with diastolic pressure between 130 and 160 mm. Hg was 10.2 ml.; while in diastolic pressures over 170 mm. Hg flow averaged 3.3 ml.

The authors postulate that these results should be interpreted as evidence that a functional abnormality of the blood vessels is probably more important than excessive activity of the vasomotor nerves in the production of hypertension.

Muscle Tension Headache. B. D. Judovich. Pennsylvania M. J. **59**:901 (Aug.) 1956.

This monograph reviews and refutes many of the time-accepted theories of the relation of muscular tension to headaches and advances a new concept in the etiology of tension headache.

The author points to muscular spasm in the cervical area as a result rather than cause of the mechanism of pain in tension headache. Using muscular spasm of the herniated cervical disc as an example of this, he points out that headache is by no means part of the picture even though the spasm is severe. He does not, however, ignore the role of physical fatigue, stress of overwork and emotional disturbance contributing to the development of these headaches in susceptible individuals.

A comparison of paraspinal and peripheral muscular spasm and pain is made. Voluntary contraction of biceps brachii is associated with ischemia, local collection of metabolites, and performance of work results. These factors are not present to the same degree in paraspinal muscular spasm. Dr. Judovich, by use of vasodilators with cervical muscular spasm in evidence, explodes the theory that muscular spasm here includes vasoconstriction and hence culminates in headache. Vasodilatation occurs in spite of sustained cervical muscular spasm, and the author states that no vasodilator can expand a vessel to normal against a contracting muscle if pain were really due to ischemia caused by muscular compression of arteries and arterioles.

Other conclusive evidence includes the stimulation of already spastic muscles by a rapid sine wave current for a one-half hour period with results that 14 out of 15 so treated patients were relieved of their headache and pain.

Three types of cervical muscular spasm are defined: reflex; intrinsic or primary muscular spasm, and loss of tonus inhibition. The author advances his theory that intrinsic muscular disturbance results in vasoconstriction which in turn leads to pain, tenderness and muscular spasm. He points to the hypothalamus as the suspected seat for the release of "stress substance" responsible for triggering the pain mechanism. Reviewing embryologic derivations of head and neck muscle innervations, the hypothesis is advanced that autonomic efferent impulses regulate the impulses as well as somatic. The author states the focal localization of pain is in the neck and head areas when the stress, overwork, fatigue and emotional factors become prevalent.

The Metabolism of Fructose in Man. Max Miller; James W. Craig; William R. Drucker, and Hiram Woodward, Jr. Yale J. Biol. & Med. **29**:335 (Dec.) 1956.

The authors present an exhaustive comparison of glucose and fructose metabolism in man under a variety of experimental conditions. By administering each at a rate of 1 gram per kilogram of body weight per hour as a 10 per cent solution to normal subjects, diabetics, in experimentally induced acidosis, patients undergoing minor and major surgery and volunteers undergoing ether anesthesia with no surgery, they establish a number of important facts regarding glucose and fructose metabolism. Although a small part of intravenously administered fructose is converted to glucose and although both fructose and glucose may appear in the urine, fructose is removed approximately as rapidly from the blood in the diabetic in the absence of detectable insulin effects as in normal persons, and rapidly enters the carbohydrate metabolic cycle. Fructose is shown to be assimilated into muscle, but the authors do not present evidence that it is utilized. By perfusion of intact muscle with C14 labeled fructose from the arterial side and studies of metabolic products in the

venous return, one should be able to give evidence for or against the assumption that assimilation means utilization. The alterations in glucose metabolism seen in acidosis, infection, surgery, ether anesthesia and starvation were not seen or were much less evident in fructose metabolism under similar circumstances. The authors demonstrate a more rapid and more satisfactory recovery of diabetics from experimentally induced acidosis and in clinical management of patients with acidosis when they are treated with a regimen of 10 per cent fructose intravenously with insulin during the first six hours than when either NaCl or glucose plus insulin were used. The authors conclude from their evidence that fructose is of value in the initial hours of therapy of diabetic acidosis.

Operative Results in Lumbar "Disk" Syndrome. G. G. Clark. U. S. Armed Forces M. J. 8:195 (Feb.) 1957.

One hundred patients operated for herniated lumbar discs were evaluated in this study to determine the efficacy of interlaminar exploration. These patients were all treated at the U. S. Naval Hospital, Oakland, Calif. Seventy-five per cent of the cases were returned to active duty in from two to six months. The followup period ranged from six to 28 months. Conservative management was tried in all cases for two to six weeks. If the signs and/or symptom persisted, myelography was performed. The interlaminar exploration was the surgical procedure in all but one case. A hemilaminectomy was done in this case because of extrusion of fragments of disc into the spinal canal.

The author states that the postoperative management was considered to be one of the most important elements in the patient's treatment. On the day of the surgery the patient was urged to get out of bed to void. Every patient was out of bed on the first postoperative day. Walking short intervals for the first five days was allowed. Stitches were removed on the seventh postoperative day. The patient was then transferred to the convalescent ward, and he was encouraged to take more frequent short walks. He was instructed in exercises designed to develop the maximum power in the lumbar and gluteal muscles. Two weeks after surgery the patient was given 30 days of sick leave. He was given strict orders to exercise at home and to report his progress by mail. On return from sick leave the patients were started on intensive physical therapy for 10 days. The patient was re-evaluated following this 10-day period. The author reports the varied duties to which 75 per cent of the patients returned. No range of age was given in this series.

The "March" of Temporal Lobe Epilepsy. Janice R. Stevens. A.M.A. Arch. Neurol. & Psychiat. 77:227 (Mar.) 1957.

Forty patients without tumor or progressive degenerative disease, and free of major neurological stigmata were studied for the association of certain groups of symptoms in a single, repeated epileptic seizure. Of the 40, 31 had spiking or sharp activity in the temporal or basal region in EEG, six showed focal slowing in the temporal region, and three were reported as having normal encephalograms. These patients were questioned about the succession of subjective experiences during such seizures. Amytal interviews were used to obtain some information which patients failed to produce on direct questioning.

The author describes four major groups of subjective symptoms:

1. primary sensory receiving (olfaction, taste, audition and equilibrium);
2. visceral (gastrointestinal, cardio-respiratory, bladder, and deep body structures);
3. complicated elaborations and distortions of the primary sensations, and
4. kaleidoscopic panorama of emotional and intellectual states (fear, pleasure, sorrow, anger, anticipation, dread, sexuality, familiarity, strangeness, guilt, depersonalization, revelation, reliving past experience or memory).

The major symptom complexes demonstrated in this study were these:

1. gastric aura — followed either by fear, then disagreeable olfaction delusions, hallucination of unpleasant nature, grand mal seizure, running, grabbing, snorting, choking, and fighting when restrained;
2. cephalic aura followed by anticipation, expectancy, lip smacking, chewing, jumbled speech;
3. olfactory aura (pleasant state followed by illusions, delusions, confusions, unreality, fighting, flight);
4. vertigo or tinnitus followed by illusional states — then fear, fighting, flight.

It is interesting to note that unpleasant olfaction in this series did not appear as a first symptom. It usually followed fear or anxiety, and was followed by depression, sorrow, anxiety, then fighting, flight, and mastication.

Histological and Pharmacologic Studies on Nonhealing Dermal Wounds. Arthur L. Garnes, and Robert D. Barnard. Angiology 8:13 (Feb.) 1957.

Histologic studies of chronic dermal ulcers — lesions which had appeared totally inactive and had proved unresponsive to local antibacterial therapy and to treatment of vascular and other systemic deficiencies — indicate that the majority cannot heal because of capillary blockage accompanied by collagenization of fibrous tissues. The occluding material is erythrocytes presumably agglutinated by prod-

ucts of tissue breakdown (mucopolysaccharides and nucleoproteins).

Fourteen clinical cases were treated with an ointment under pressure dressings twice weekly containing an antiagglutinin (cuprichlorophyllinate 0.5%) and a proteolytic debriding agent (papain 10%, urea 10%). Twelve of the 14 cases responded (86%) and all 12 healed completely.

Ten cases were treated with the antiagglutinin alone. There was partial healing in two and complete healing in four (40%). Eight cases were treated with the proteolytic agent alone. In two there was partial healing and in two complete healing (25%).

The authors conclude that the results obtained support the hypothesis that successful treatment of static (non-healing) ulcers requires a proteolytic agent, capable of removing the collagen barrier and a hemagglutination inhibitor to combat capillary obstruction.

Surgical Treatment for Poliomyelitis Paralysis. Principles of Reconstruction of the Lower Extremities. Alvia Brockway. California Med. **86**:37 (Jan.) 1957.

Review of the goals of reconstructive surgery of the lower extremity is made. It is stated that in general, surgical procedures are done more frequently on proximally located structures of the lower extremity than on distally located muscles. One can stand fairly well with a weakened foot, but not with a weakened hip.

In general, indications for surgical procedures in poliomyelitis on adults are much less frequent than on children according to the author. The deformities of the spine occur more frequently in patients having had poliomyelitis before than after the age of 15. Adults rarely require tarsal stabilization procedures, tendon transplantations to correct varus or valgus deformities of the foot, or reconstructive procedures to correct equinus deformities, contractures of knee, etc.

The author discusses the exact type and choice of surgical procedures done for various deformities of the foot, instability and contracture deformities of the knee (weak quadriceps, genu recurvatum, genu valgum, etc.), disabilities of the hip, abdominal weakness, and procedures for arthrodesis of hips, knees and feet.

The author points out that none of these operative procedures works miracles. For instance, the corrective procedures for the hip provide greater stability and a sense of more endurance for walking and standing. The author believes reconstructive surgery provides a means of preventing permanent disabling deformity, a correction in part of existing deformities, and improves the patient's ability to perform more activities of daily living.

Efferent Brain Discharge During Shivering. Lucy Birzis, and Allan Hemingway. J. Neurophysiol. **20**:156 (Mar.) 1957.

In 12 of 20 anesthetized and tracheotomized cats efferent shivering discharges were recorded with microelectrodes (25 micron tip diameter) placed in the rostral midbrain and in the posterior hypo-thalamus-sites previously determined by experimental lesions to be in the shivering pathway. Curarization and artificial respiration were employed in all cases to rule out movement or muscle potential artifacts. Hemisection and midsagittal section isolated the electrode from all incoming ascending impulses. The frequency of discharge of individual units varied from 6 to 26 per second and appeared as a continuous stream of impulses having no rhythmic pattern. The intensity of discharge (both frequency and number of active units) was directly related to the intensity of shivering.

Cooling of the animals in an ice bath increased the intensity of the discharge both before and after curarization. Within minutes after warming in hot water of about 45° C. the discharge slowed and stopped. This was related to the cessation of shivering. Control records outside the shivering pathway showed no change of discharge during warming or cooling of the animals. Rectal temperatures did not change appreciably during the short periods of warming and cooling.

Timed-Disintegration Capsules (Tymcaps) — A Further Study — An in vivo Roentgenographic Study, Blood-Level Study and Relief of Anginal Pain with Pentaerythritol Tetranitrate. T. M. Feinblatt, and E. A. Ferguson, Jr. New England J. Med. **256**:331 (Feb. 21) 1957.

In a further study of timed-disintegration capsules, the disintegration pattern visualized *in vivo* by roentgenography was confirmed by periodic blood-level determinations of the drug and clinical responses. The medication used was Corovas Tymcaps (timed-disintegration capsules of pentaerythritol tetranitrate), which were administered to 20 patients suffering from chronic symptoms of angina pectoris. Comparison of the results showed that X-ray visualization of disintegration, blood-levels of pentaerythritol tetranitrate and the clinical response all agreed. The evidence of X-ray dispersal, continued consistently high blood levels, and continuing substantial reduction of pain showed continuing absorption and utilization of the pentaerythritol tetranitrate during the period from three to nine hours after administration. The conclusion was reached that pentaerythritol tetranitrate administered in the form of timed-disintegration capsules can be evenly and consistently utilized for control of anginal pain. Corovas Tymcaps contain pentaerythritol tetranitrate 30 mg. The first quarter (7.5 mg.) of this medication is

dispersed immediately; the second, third and fourth quarters, after three, six and nine hours, respectively. The preferred technic of administration is one capsule every twelve hours, taken on an empty stomach with an adequate amount of water. The suggested optimum time of administration is one capsule half an hour before breakfast and a second capsule before the evening meal approximately twelve hours later.

Classification of Disability in the Chronically Ill and Aging. E. Moskowitz, and C. B. McCann. J. Chron. Dis. 5:342 (Mar.) 1957.

The present generally accepted classification of disability in the aged is based primarily on evaluation of medical diagnoses. Recently several attempts have been made to set up criteria which would more adequately clarify the functional ability of the elderly patient. The authors, in an attempt to reconcile the performance criteria of the various methods in use today, have recommended a modified form of the "Pulhems Profile" which has been adapted to apply to the chronically ill and aged.

The profile is divided into six categories with four numerical gradations depending on the extent of involvement. The number one indicates no gross abnormality considering the age of the patient, while the number four classification signifies marked involvement in the category indicated. The six broad general categories are listed as 1) "P" or physical condition; 2) "U" or upper extremities; 3) "L" or lower extremities; 4) "S" or sensory components relating to speech, vision, and hearing; 5) "E" or excretory function, and 6) "S" or mental and emotional status. The numerical values given to the various categories constitute the basis for interpretation of the profile. This relieves the paramedical personnel, including social workers, of the difficult task of trying to interpret medical data. It is not intended, however, to supersede a careful medical diagnostic evaluation. The inherent dangers in this type of classification lie in the interpretation of grossly inadequate data by persons who would have extreme difficulty interpreting a thorough, detailed medical evaluation.

Present Status of Ultrasound in Medicine. Fritz Friedland. J.A.M.A. **163**:799 (Mar. 9) 1957.

At the present time ultrasound may be medically applicable as an experimental laboratory device, as radiant energy in physical therapy, as a selectively destructive agent and as a diagnostic tool. Therapeutically ultrasound is useful in the treatment of rheumatic, inflammatory and traumatic lesions of the neuromuscular and musculoskeletal systems. Its efficacy is based on hyperemia which is the result of the heating effect. The mechanical effect is questionable or at best of minor importance when non-destructive doses are applied. There is no evidence that ultrasonic therapy is more efficacious than other forms of radiant energy such as short wave diathermy. The author did not obtain favorable results in the treatment of painful stump neuromas and phantom limb pain—conditions which were previously reported to respond well to ultrasound. Contraindications to therapeutic application are malignant tumors, anesthetic skin areas and arterial insufficiency of the extremities. Certain organs such as the eye may be subject to hemorrhage. Sonation of the pregnant uterus should be particularly avoided.

The treatment of tumors by destructive doses is still experimental. It is at the present time doubtful whether disintegration of calculi or destruction of bacterial foci will be practicable.

There has been promise of diagnostic application in the use of ultrasound to outline deep-lying masses of soft tissue.

The Epidemiology of Atherosclerosis Among a Random Sample of Clothing Workers of Different Ethnic Origins in New York City. I. Prevalence of Atherosclerosis and Some Associated Characteristics. Frederick H. Epstein; Ernst P. Boas, and Rita Simpson. J. Chron. Dis. 5:300 (Mar.) 1957.

The prevalence of clinical atherosclerosis was studied in a working population who were members of a labor union representing workers in the men's clothing industry in New York. A sample of 683 men and 592 women aged 40 and over was drawn at random. Italian and Jewish immigrants comprised over 90 per cent of the sample. Diverse ethnic groups accounted for the rest.

Coronary heart disease was twice as frequent in Jewish men as in Italian men (16.4% :7.4%). There was no difference in prevalence in the women (3.6%:3.7%). There was no ethnic or sex difference in the prevalence of aortic atherosclerosis. Peripheral artery disease determined roentgenographically suggested that Jewish men and women were more often affected. However, the sub-sample studied was too small to be significant. There was no significant difference in prevalence of hypertensive or rheumatic heart disease in the two ethnic groups. Jewish men and women had higher serum cholesterol values than their Italian counterparts (239 mg. %, 264 mg. %:222 mg. %, 230 mg. %). There was no ethnic difference in serum phospholipid levels, blood pressure levels and in the prevalence of diabetes mellitus.

Effects of Posture and Activity on the Major Fractions of Serum Protein. J. C. Aull, and W. M. McCord. Am. J. Clin. Path. **27**:52 (Jan.) 1957.

Fractional serum protein determinations were carried out on blood samples collected from a group of twenty medical students while at bed rest, 15 to 30 minutes after arising, and during the mid-morning period of a normal day. Similar determinations of only a single sample collected 15 to 30 minutes after arising in another group of 20 medical students were also noted. The phosphate turbidity method of Aull-McCord was utilized.

Normal serum protein levels ranged from 6.58 - 8.17 gm./100 ml. in the 40 subjects tested with mean albumin 58.7 per cent, alpha globulin 14.0 per cent, beta globulin 15.9 per cent, and gamma globulin 11.5 per cent.

When the determinations of sample A (patient at bed rest) were compared with sample B (15-30 minutes after arising) an average increase in total serum protein of 0.53 gm./100 ml. was noted. Results obtained on sample C (during mid-morning activity) showed an average increase of serum protein of 0.88 gm. over those obtained with sample A. This added increase was probably due to additional effects of posture and activity. The percentage distribution in the fractional proteins remained approximately the same in all samples.

Cerebellar Ataxia and Neuronitis After Exposure to DDT and Lindane. T. M. Onifer, and J. P. Whisnant. Proc. Staff Meet. Mayo Clin. **32**:87 (Feb. 20) 1957.

Acute intoxication in man caused by chlorophenothane (DDT) usually begins with paresthesia of the tongue, lips, or other portions of the face or, in severe poisoning, of the extremities. Later there occurs a sense of apprehension, disturbances in equilibrium, dizziness, confusion and a tremor exaggerated by voluntary movement. In severe poisoning there may be paresis of the hands or the sudden occurrence of a generalized convulsion. Recovery usually begins within 24 hours after the exposure has ceased. A test has been reported for measuring the urinary concentration of one of the metabolites of DDT. This may be useful in determining the amount of absorption of DDT. The effects of the gamma isomer of benzene hexachloride (Lindane) on animals are described. A case is reported with neurological findings similar to those seen with DDT intoxication. Good circumstantial evidence is given that these findings may have been caused by a DDT and Lindane vaporizer. There is no proof included of the fact that DDT or Lindane was the cause of the patient's neurological symptoms.

The Etiology and Prevention of Volkman's Ischemic Contractures. P. R. Lipscomb. Surg. Gynec. & Obst. **103**:353 (Sept.) 1956.

This is a review of 92 cases of Volkman's ischemic contracture seen at the Mayo Clinic from 1935 through 1954. The characteristic finding in this condition is a painful, cold and cyanotic forearm with loss of motor function caused by rapid necrosis of muscles and resultant fibrosis and flexion deformity of the fingers. Usually the earliest signs appear in four to six hours after the injury; however, in a few cases the time of onset varied from 48 hours to a week.

Arterial injury associated with vascular spasm is the most important cause of this condition. However, in the upper extremity major arterial obstruction is not considered as important in the production of the contractures as is the associated spasm of the collateral blood vessels. The ulnar nerve in its position between the heads of the flexor carpi ulnaris, and the median nerve in its position between the heads of the pronator teres and under the tendonous arch of the flexor digitorum sublimis, are particularly susceptible to injury from the contracture and fibrosis of these muscles.

The contractures followed supracondylar fractures in 44 instances, and 18 times following fracture of both bones of the forearm. A gradation of severity from one to four was made. The author believes that 38 of the 92 contractures were preventable in the light of knowledge available in 1935, whereas 61 of the contractures would have been preventable with present-day information. He likewise believes that further study could reduce the occurrence of the condition even more.

Fifteen of 57 patients who stayed for two weeks or longer were treated by splinting or physical therapy or both. The other 42 patients had one or more surgical procedures performed. In late contractures, the operation most frequently performed and with the most encouraging results was lengthening of the tendons.

In addition to the avoidance of tight bandages, tight plaster of paris casts, and acute flexion of the elbow which may aggravate a previously existing circulatory disturbance, it is believed also that reduction of fractures and dislocations about the elbow will reduce trauma to main arteries. The author cautions against forceful reductions which may injure the brachial artery. If after the first "p" of pulselessness is noted, the other three "p's" of pain, pallor and paralysis appear, immediate exploration of the arteries and nerves in the antecubital fossae is indicated. Resection of the damaged segment of artery relieved the spasm and allowed the collateral circulation to take over. If a section of artery which is in spasm but does not appear damaged is not relieved of the spasm following such procedures as bathing the artery in isotonic

saline solution or a solution of procaine hydrochloride or infiltration of the stellate ganglion with procaine, that part of the vessel should be resected. In compound or other fractures and severe crushing and contusion injuries of the forearm accompanied by severe edema, attempts should not be made to close the wound primarily. Instead, extension of the original wounds and use of relaxing incisions often are indicated.

The article shows how adequate and early treatment of acute vascular injuries usually insures a good prognosis, but delay may lead to a serious and permanent disability.

The Effect of Compression on the Growth of Epiphyseal Bone. L. J. Strobina, et al. Surg. Gynec. & Obst. **103**:85 (July) 1956.

This study is directed toward the determination of the force exerted by the growth of epiphyseal bone and the rate of growth of bone under increasing compression. This research has been in progress for more than 5 years and to date 12 calves have been used in the study.

A tension device strung between the proximal epiphysis and the diaphysis was used. A device for measuring growth was placed on the control tibia in each animal. Six very interesting experiments on the effect of force of compression on the growth of bone in the tibia are presented.

Epiphyseal bone follows an "all or none" law of growth with respect to compressive force exerted against it. It was shown that the force exerted by the upper tibial epiphysis is a little less than the total weight of the animal indicated by the reading of 340 pounds necessary to produce epiphyseal arrest. This is equal to 45 pounds per square inch of cross-section of the bone. The authors state that it would be expected, though not proved, that the force is in direct proportion to the cross-sectional area. This would suggest that the smaller the bone the less the force of growth and that arrest of growth in the upper extremity probably requires less compression force than in the lower extremity.

Cessation of growth was accomplished for a relatively long period of time in the calf — 5 to 7 months, which in humans would be equal to 3 to 4 years. The epiphyseal plate remained viable and, after compression was released, grew at an accelerated rate sufficient to equalize 1⅛ inches of shortening. The diameter of the arrested bone though less than on the control side, was equalized when the animal and the bone had reached full maturity.

Meprobamate (Miltown) in Rheumatic Diseases. R. T. Smith, et al. J.A.M.A. **163**:535 (Feb. 16) 1957.

Two hundred fifty-two patients were tested with meprobamate in order to ascertain the effectiveness of the drug on the fibrositic component of rheumatoid arthritis, osteoarthritis and varied musculoskeletal diseases such as torticollis, low back muscular spasm, chronic gout, and subdeltoid bursitis. The authors found that 83 per cent of the patients so treated received benefit from the drug. Criteria for determining improvement were not listed.

The authors review briefly the pharmacologic actions of "Miltown" and list three actions of the drug namely, muscular relaxation; thalamic effect (a selected activity causing synchronization) and a psychic effect affecting behavior. It is the belief of the authors that meprobamate is more of a muscular relaxant than a tranquilizer. Dosage of 400 to 200 milligrams was used four times daily. Relief of pain and muscular spasm was noted in 20 to 30 minutes after oral ingestion of the drug. This persisted throughout the waking hours if the drug was repeated three to four times in a day. Toxic effects described were minimal and consisted chiefly of drowsiness and inhibition of normal mobility of the bowel.

Advantages of the use of meprobamate were cited in patients who required physical medicine and rehabilitation measures, making the patient more relaxed and thus more amenable to exercise programs. Patients were treated with a combined steroid and meprobamate tablet when steroids were indicated and the action of the meprobamate seemed to be that of an "inhibitory effect on the overstimulation effect of the steroids." The authors conclude that there is a definite benefit to be derived from meprobamate when used in patient with voluntary muscular spasm and/or associated loss of strength or function.

A Study of 25 Cases of Compression of the Cauda Equina by Prolapsed Intervertebral Discs. W. Bryan Jennett. J. Neurol. Neurosurg. & Psychiat. **19**:109 (May) 1956.

Twenty-five cases of compression of the cauda equina due to prolapsed intervertebral discs are described. The author states that in most cases of sciatica due to a prolapsed intervertebral disc the resulting deficits, e.g., weakness, sensory and reflex changes, and muscular wasting, are unilateral, rarely disabling, and are of importance chiefly in diagnosis and localization. In a smaller number of cases there are profound bilateral signs. These include paralysis of the lower extremities, sensory loss in the sacral distribution, and sphincter paralysis. This is the one type of prolapsed intervertebral disc lesion which does not re-

spond to conservative therapy and is the only type which may constitute a threat to life.

The incidence of paralysis due to injury of the cauda equina in the 1000 cases operated for protruded lumbar disc was two per cent. The actual incidence of compression of the cauda equina in all lesions of the lumbar disc is not as high because almost all cases of involvement of the cauda equina are operated, whereas only a small portion of cases with sciatic pain presumed due to lesions of the disc are treated surgically.

The symptoms of compression of the cauda equina include pain, paralysis of muscles and sphincters, and disturbances of sensation. In about half of the cases the patients had bilateral sciatic pain in the paralytic attack. In four cases there was dramatic relief of pain with the onset of paralysis. The severe compression which abolishes tracts conducting painful stimuli also abolishes the motor tracts. Forty-five per cent of the cases experienced profound muscular paralysis. This usually involved the anterior tibial and peroneal groups. In all but one case there was abject sensory loss, most often in the whole sacral distribution. In five cases the sensory loss was confined to a small area around the anus. This may be the only objective evidence of a neurogenic cause for sphincter paralysis. Some degree of paralysis of the anal and vesical sphincters occurred in all but two of the 25 cases. Complete sphincter paralysis was always accompanied by bilateral sensory loss in the saddle area. Sphincter paralysis is often the only symptom which demands operation.

From the author's analysis of the 25 cases and 34 cases reviewed in the literature, several points were emphasized. Compression of the cauda equina by intervertebral discs is quite unpredictable, although the possibility is slightly greater past middle age. Bilateral signs and symptoms commonly precede serious compression and often indicate its imminence. There is also evidence that a sudden movement may precipitate compression. Therapeutic manipulation of patients with symptoms of prolapsed intervertebral discs is risky and should not be undertaken without considering the possibility of precipitating a compression of the cauda equina. Diagnosis is not usually difficult. However, myelography is important not only in revealing the site of the lesion but also in indicating the presence of two lesions, one of which might not have been suspected from the clinical evidence. Incompleteness of recovery is stressed. In only four patients of 24 who were followed for as long as 14 years, has complete recovery been obtained. Generally, recovery of motor function is better than sensory. Sphincter paralysis is sometimes the only remaining disability. Of 14 patients who had total paralysis of the bladder and bowel before operation, only two regained full control and sensation. In general, recovery of control of the bowel was poorer than the bladder.

Another Method of Treatment of Subdeltoid Bursitis. C. J. Frankel, and D. V. Strider. South. M. J. **49**:513 (Dec.) 1956.

This is a study of 37 patients with acute exacerbation of chronic subdeltoid bursitis treated by intravenous injection of Priscoline. A dose of 25 mg. was given daily or every other day until a dosage never exceeding 75 mg. was reached. Many other methods of treatment had been tried in all of these cases, and the use of Priscoline was resorted to almost as a measure of desperation.

The results were regarded as "excellent" in those patients who were completely free of pain when the arm was at rest and who showed no limitation of motion or pain on motion. "Good" results indicated almost complete relief of pain with the arm at rest, but some limitation of motion persisted. "Poor" results indicated equivocal relief of pain at rest and marked limitation of motion.

The results were classified as excellent in 19 cases; good in 17 cases, and poor in only one case. Acute exacerbations appeared in a period of from 8 months to 6 years in 5 of the 37 cases. Seventeen patients were given continuous exercises for from 26 to 120 days before a useful range of painless motion was restored. The authors were encouraged by the "successful" results and believe that this is a safe, simple and inexpensive way to treat these patients.

The authors did not provide objective criteria, such as measurements of range of motion of the shoulder before and after treatment. Also, it is noted that intensive physical therapy was used in addition to the Priscoline in almost half their cases.

medical news

Members are invited to send to this office items of news of general interest, for example, those relating to society activities, new hospitals, education, etc. Programs should be received at least six weeks before the date of meeting.

Top Award

Louis B. Newman, M.E., M.D.

Dr. Louis B. Newman received the alumni Distinguished Service Award for 1957 in recognition of exceptional services in the fields of Science and Medicine from The Alumni Association of Illinois Institute of Technology, Chicago. The presentation was made at dinner on May 3, 1957.

Dr. Newman, who received his M.D. from Rush Medical College in 1931, has combined an engineering background with knowledge of physical medicine.

Chief of physical medicine at the VA Research Hospital and a professor at Northwestern University Medical School, he received the 1956 John E. Davis Award for "distinguished leadership and outstanding service," the highest honor bestowed by the Association for Physical and Mental Rehabilitation.

Dr. Newman, while an intern at Cook County Hospital, contributed significantly to research in pelvic heating and hypothermy. He developed apparatus for local and general hypothermy and received a special award for cryotherapy in 1939.

As U. S. Naval commander in World War II, he headed departments of physical medicine and rehabilitation at naval installations in Seattle, Wash., and Oakland, Calif. He is the author of numerous articles for medical journals.

Before joining the staff of the Research Hospital, Dr. Newman was chief of physical medicine and rehabilitation at the VA Hospital at Hines, Ill. He has shared his engineering and mechanical backgrounds in the development of assistive devices for severely disabled persons and other types of adaptive devices used in rehabilitation.

MD's Lean to Offices in Hospitals

An increasing number of physicians will locate their offices in hospitals in the future, according to the past president of the American Hospital Association.

Ray Brown, administrator of the University of Chicago Hospitals and Clinics, says the reasons are desire for better efficiency and the growing complexity of medical care.

Brown likened the hospital to a large shopping center. "It is becoming the market place for medical care," Brown said. "The physician is the producer and the patient is the customer."

Carrying the analogy further, Brown said the patients like the idea of adequate parking facilities and of finding all of their services in one place instead of being compelled to go from one specialist to another. Use of hospital equipment by outpatients will help reduce the cost of these facilities to inpatients, Brown said.

Russian Technology Approaching U. S. Standards

Recent statistics reveal that Russian technology is rapidly approaching U. S. standards. In Russia last year, the million graduated from high schools had successfully passed five years of physics, five years of biology, four

years of chemistry, ten years of mathematics through trigonometry, one year of astronomy and six years of foreign languages. In the U. S. in 1950, for example, only four per cent of our high schools were teaching physics; 7 per cent, chemistry; 13 per cent, geometry, and 27 per cent, algebra.

In addition, Russia has thirty-three universities, 180 technical institutes and 3,796 trade schools. The trade schools turn out 70,000 technicians for assignment to routine scientific tasks. The 266,000 now attending engineering schools are selected, gifted students and are pushed to the limit of their intellectual abilities. Their tuition is free, and they receive pay. Thirty per cent of all students are enrolled in engineering.

In the U. S. there are 218 accredited engineering schools with 156,000 students enrolled. This is only 8 per cent of all college students.

Easter Seal Society to Meet

The 1957 annual convention of the National Society for Crippled Children and Adults — the Easter Seal Society — will be held October 31 to November 2, in Chicago at the Palmer House.

Prominent authorities who specialize in the rehabilitation of crippled children and adults as well as lay persons interested in non-scientific aspects of the work will participate in the three-day meeting. Speeches, seminars, workshops, clinics and demonstrations will spotlight the newest technics and latest information in the care, treatment and training of the crippled.

Guatemala Setting for Rehabilitation Conference

In cooperative action with the Government of the Guatemala Republic, and mainly in the interest of the countries in the Caribbean area, the International Society for the Welfare of Cripples is sponsoring an Inter-American Conference on Rehabilitation, to be held in Guatemala City, November 8-12, 1957. The meeting is being designed to cover a range of basic rehabilitation topics of the most urgent interest to physicians, surgeons, nurses, therapists, educators, administrators, social and community workers, vocational counselors, prosthetic personnel and public health officials.

Professional meetings, to be conducted in Spanish for doctors, therapists, nurses, teachers, auxiliary and social workers, are slated for the opening days of this comprehensive regional parley. All general sessions for the remainder of the week will be conducted in both English and Spanish, and will deal with fundamentals of training and teamwork for the physically handicapped citizen, as well as the social and vocational aspects of the rehabilitative process and the implications of increased regional and world cooperation in this field. The conference will also include a showing of the best current rehabilitation films and visits to local hospitals and rehabilitation centers. Additional information about the forthcoming Guatemalan conference can be obtained from the Secretary General, ISWC, 701 First Avenue, New York City 17.

Be Warned — Against Hoxsey Treatment

In April, 1956, the Food and Drug Administration issued a warning and thereby notified the public that the Hoxsey treatment was not only useless but imminently dangerous if it was relied upon in neglect of competent and rational treatment.

The government was successful in 1953 in obtaining an injunction against the interstate distribution of liquid mixtures containing potassium iodide and herbs in water, or potassium iodide and lactate of pepsin, for the treatment of internal cancer. After this action, Mr. Hoxsey substituted certain black or red pills, the composition of which, he claimed, was identical to that of the liquid preparations.

A large quantity of these pills was siezed in Pittsburgh in March, 1955. It was not, however, until October, 1956, that the matter was heard in federal court in Pittsburgh. The government demonstrated the worthlessness of the Hoxsey method, and the seizure was upheld by a federal court and jury in November, 1956. At this writing a motion for a new trial is still to be heard; yet the possibility remains that, if such motion is lost, an appeal will be filed by Hoxsey. In the meantime, he and his agents remain "in business."

Prizes in Plastic Surgery

The Foundation of the American Society of Plastic and Reconstructive Surgery announces the eighth annual scholarship contest. Two prizes ($1,000 and $750) will be awarded for the two best essays on original research in plastic surgery by plastic surgeons who have been in practice less than five years. Two other awards, consisting of silver plaques, will be given for the best research in plastic surgery by a plastic surgeon who has been in practice more than five years and a researcher outside the field of plastic surgery. For information, write Dr. Clarence R. Straatsma, President, Foundation of the American Society of Plastic and Reconstructive Surgery, 5 E. 83rd St., New York City.

Medicine on Postage Stamps

The United States post office department issued on January 15 a three cents stamp to commemorate the production of an effective vaccine to prevent paralytic poliomyelitis. It carries the inscription: "Honoring Those Who Helped Fight Polio." A shield bears the caduceus.

Foreign postage stamps of recent issuance and of interest to collectors of stamps with a medical significance include the following:

Austria — A 2.40 schilling stamp to commemorate the centenary of the birth of Dr. Wagner-Jauregg (1857-1940), founder of the Vienna School of Medicine and 1927 Nobel Prize winner.

Belgium — A seven-value tuberculosis fund set. The low-value issues show the double-barred Cross of Lorraine on the sail of a ship; the others an examination of an infant, an x-ray examination and the rehabilitation of patients recovering from tuberculosis.

Cuba — Four one-centavo stamps for the annual National Tuberculosis Fund.

Finland — The University Clinic in Helsinki is pictured on a 30 markka stamp to commemorate the 200th anniversary of the public health services. Four stamps for the Finnish Red Cross were issued.

France — Two Red Cross stamps were issued; 12 francs plus 4 francs, and 15 francs plus 5 francs.

German Federal Republic — Symbolic figures of a mother, midwife and a nurse, and portrait of Dr. Ignatz Semmelweiss, who pointed the way to conquest of childbed fever, are the subject of four semi-postals.

Iran — A 6-rials stamp honoring the International Health Organization features a caduceus over a map of the world.

Liberia — A 5 plus 5c stamp shows two people looking through microscopes; inscriptions are "Liberian Government Hospital," and "Research Today, Health Tomorrow."

Netherlands New Guinea — Four stamps were issued with a surcharge for leprosy relief in that country.

Philippines — A wooden statue of the Sacred Heart which Dr. Jose Rizal, Philippine patriot, carved when he was 13 years old, is pictured on 5 and 20 centavos stamps.

Romania — A 55b Red Cross stamp shows a nurse.

Turkey — A 25-kurus Red Crescent stamp pictures a mobile chest X-ray unit.

Venezuela — The University City Clinical Hospital is pictured on the 20c, 25c and 30c values of a nine-value air mail series.

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For further information regarding these opportunities, please write Burneice Larson, Medical Bureau, 900 N. Michigan Avenue, Chicago.

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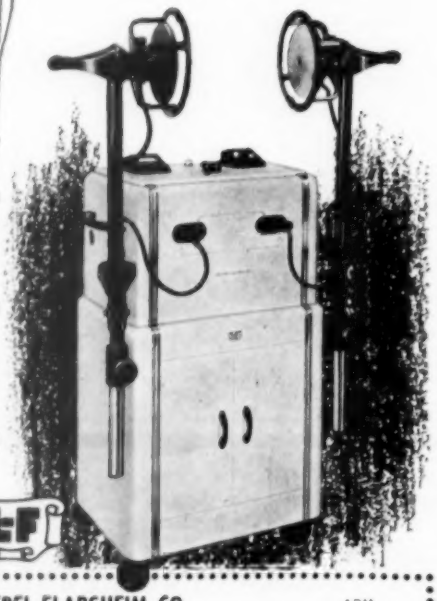

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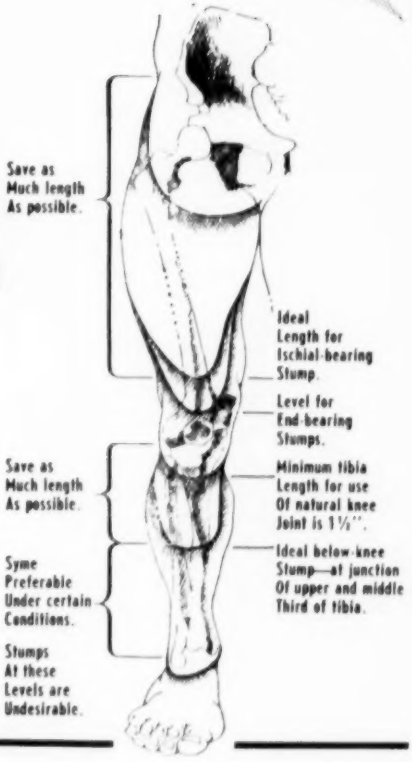

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